The Builder.

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Bronzes at South Kensington.

THE catalogue of European bronzes at the South Kensington Museum, which is just published,* adds another to a list of illustrated catalogues, whose number and bulk are getting rather alarming, and which, if they are carried out on the same scale for every department of the Museum, will almost require a separate library to themselves. To say truth, we do not quite understand the *raison d'être* of these large and expensive catalogues—for whom and for what purpose they are published. The introductory essays are generally very good, and convey a great deal of information very clearly, and these are published separately in a cheaper form. But of the catalogues, as far as we know, only these expensive forms exist; the necessity for a catalogue being probably supposed to be superseded by the full particulars in regard to each object given on the ticket attached to it. Indeed, the illustrated catalogues are often, to a great extent, only a reprint in a book of the descriptive tickets, though sometimes a good deal more is added in regard to some object of especial value or curiosity. Yet still we ask, *cui bono?* Here is a book containing a catalogue of one portion only of one class of objects in the Museum; a large, thick, expensive book, containing 250 pages of letter-press, on very thick paper, with very wide type, and making a handsome volume, no doubt, "very noble," but not of much use that we can see. For a mere book of reference, it is much more sumptuously got up than is at all necessary; for a catalogue to study along with the objects, it is far too bulky. The National Gallery catalogue contains more information in a shape that may be conveniently carried in the hand; and it would surely be to more practical purpose if the whole of at least of one section of the articles in the Museum,—the whole of the bronzes, for instance,—were described in a single volume half the size and weight of this, as might easily be done. There may be a demand for these large volumes beyond what we know of; but after having several of them before us, and perceiving that, if the system is fully carried out, there must be a good many more to come, and it being evident that a great deal of money must be getting spent over them, we are certainly rather moved to consider what practical purpose they are to serve.

This question has the more point, as it seems to us, on account of the defect which pervades the Museum, and which we have more than once called attention to, in regard to the arrangement, or rather the want of any systematic arrangement, of the objects in the building. This defect takes away at once one-half the use of a catalogue, which is either to give an explanation of an object which we have already seen, or to inform us what there is to see. Now, for this latter object the South Kensington catalogues are useless, simply because when you have found mention in the catalogue of an object you wish to see, there is not the slightest clue as to where to find it. The thing we want may be in any corner in any number of cases spread over a large floor space, or it may be hidden away in some quite separate position where it happens to come in ornamentally. The articles are elaborately numbered, and there is an index of consecutive numbers at the close of the catalogue, but the numbers have not the remotest connexion with the collocation of the articles *in situ*. We have before now spent a whole morning in endeavouring to find an object minutely described in one of the previous catalogues; and after going away unsuccessful, we stumbled upon it on another occasion in a position quite apart from everything else of its class. Suppose that a stranger to the Museum, reading the remarks about Ghiberti's gates in the introduction to the Bronzes Catalogue, and having heard that there is a copy of these in the Museum, turns to the catalogue to discover where they are. He will find no allusion to them, because they come into the "Reproductions" Catalogue; although, as their artistic connexion with the study of the subject is much more important than the mere fact that they are fac-similes and not originals, it would seem far more logical to add to the catalogue of original objects in each class that of the reproductions of works of the same class. If our stranger gets the "Reproductions" Catalogue, he will there find, probably, that there are reproductions of four specimens of bronze gates, of which Ghiberti's is one. If, after ascertaining this, he walks all over the courts, keeping his eyes about him, he will in time discover, if he is fortunate, that Ghiberti's gates are hidden in a sort of nook formed by other large objects, which project on either side of them in one of the courts. He may accidentally come upon another piece in a dark ante-room, corner-wise between this and the Persian gallery, and he may find the two others, German examples, behind some large models in the Architectural Court. If the Architectural Court were the proper place, in a classifying point of view, for these two specimens, it ought to be the place for the others also. These, however, are large objects easily seen; the search for anything small is far more hopeless. The different cases and wall spaces ought to be distinguished by some letter or combination of letters which could be added in brackets at the close of the description of an article in the catalogue, so that one could go up to it and find it with little difficulty; as it is, the catalogues are useless, except for this,—that if you see an object in the Museum which strikes you, and which you want to know more about, you may, if you have expended a goodly sum in filling a whole shelf of your bookcase with very large books, find in some one of them some further information. If, however, the converse process is attempted, and in turning over your library of catalogues you read of something you wish to see, you may nearly as well search for a lost needle in a hay-stack. This is a serious drawback to the usefulness of the Museum for purposes of systematic study and reference; and we cannot help suggesting that some of the money expended in these large and handsome, certainly, but not very useful, catalogues, would be much more practically laid out in realising a more orderly and intelligible classification in regard to position of the object described. At present the Museum is largely used by the public as a mere place of amusement, an agreeable and interesting lounge; but if it comes to be more generally used for purposes of study, the defect we have pointed out will be generally felt, and its removal probably insisted upon.

Apart from these considerations, the introduction by Mr. Fortnum is a really useful compendium of the history of bronze-founding and other methods of workmanship with this material. The principal methods that have been and are employed in the production of bronze designs are clearly explained, and this is a most important kind of information for those who even wish merely to understand the art without practising it; since a right comprehension of what the artist has done, and judgment as to the value of his work, can hardly be formed without knowing something of the nature of the processes employed, and the practical difficulties to be contended with. We regret, however, to meet again with that pretentiousness in the use of language which seems to pervade the atmosphere of South Kensington, and which we had occasion to refer to only a week or two since in noticing a course of lectures delivered there. Mr. Fortnum is not as fantastic in his language as Dr. Zerffi, but why are we to have such an expression as "toreutic art," which only means sculpture? Why is a bronze article to be described, in the language of Shakspeare's day, as "parcel gilt," instead of by the usual expression of ordinary modern language, "partly gilt"? There really seems to be a kind of determination to avoid all plain English as much as possible; to have a language (if it may not sometimes rather be called a jargon) peculiar to "the Department." There is pretence about all this; it repels sensible people, and serves no purpose except to make simple ideas seem mysterious and unintelligible.

* A Descriptive Catalogue of the Bronzes of European Origin in the South Kensington Museum. With an Introductory Notice by C. Drury E. Fortnum, F.S.A. London: Chapman & Hall.

Whilst recognising the full and interesting information which the Introduction gives in regard to the facts of bronze art and its history, we may suggest that something might have been said with advantage as to the artistic character which bronze work should present, as distinguished, for example, from marble sculpture. This hardly seems to be enough thought of. We cannot ourselves think that the reproductions in bronze of works which have been originally designed in marble, which are so common an ornament in those houses especially (too numerous) where art is looked upon as merely supplying a higher class of ornamental furniture, have any great interest or value. Those delicacies of contour and curve which delight us in marble, and which the eye so perfectly appreciates in that material, lose their effect in bronze, owing at once to the dark colour of the material, and the sharpness of the reflected light which it gives. There is about such works (however they may serve, and have served, in helping to popularise art) a mechanical and mere *objet de luxe* appearance which is alien to the best artistic sympathies and appreciations. And this drawback applies, we think, to a greater or less extent, to works which, though original, are designed and modelled in the same style as that employed for marble. We cannot help feeling that a style suitable to one material has been applied to another with which it has not the same affinity. There is a certain specialty imparted, it is true, when the bronze statue accomplishes the treatment of some attitude which would be unattainable with safety in such a more brittle material as marble: as, for instance, in the well-known bronze Mercury, a copy of which is in the Architectural Court of the Museum, and which would be impossible except in metal. There are, perhaps, two opposed characteristics of style either of which gives a marked and distinctive character to bronze work. Either we may aim at a largeness and massiveness of style,—broad surfaces with a few bold projections, which catch the light and emphasise the main lines of the design; or we may avail ourselves of the characteristics of the material to produce a busy brilliant effect of sharp edges and contrasting lights. An example of the first style of treatment is exhibited in the Italian bronze of St. Jerome, which forms the frontispiece to the catalogue before us. This, in its broad surfaces, massive and simple character, and heavy angular folds in the drapery, is completely and essentially a *metal* statue; it is completely satisfactory in style considered as a work in bronze, though if a fac-simile were executed in marble it might be called deficient in finish. Some of the early and rude German bronzes in the Museum, also partially illustrated in the catalogue, have the same kind of characteristics; they can be taken for nothing but bronze work. On the other hand, Algardi's "Innocent X." (p. 7 of the catalogue) exhibits a kind of treatment of the dress, in sharp broken angles giving reflected lights, which would produce its full effect in nothing so well as in bronze. If done in marble, the effect would be to a great extent thrown away, as the material would not express in the same manner the contrasted reflections of surfaces which are really very little different in their planes, but which, meeting at an angle, and not blended into one another, scatter reflections in all directions. The working of minute ornament on the surface, as shown in this, and more decidedly in the bust of Budolph II. (page 29), is also quite in keeping with the material, provided it is kept subordinate to the main lines of the modelling. What we wish to express is, in short, that bronze casting is not capable of the refinements of marble sculpture, which are thrown away upon it; and that the designer in bronze should aim at either a broad, solid, *fused* effect, or that he should avail himself of the effect of reflected light from the dark metal to realise a metallic glitter, such as marble or other material will not produce. In either case his work will have, what all art-work should have, a style expressing the specialities of the material. We may observe, too, in regard to the first-named, or broad treatment, how much effect is obtained, and how suitably, in the treatment of drapery, for example, by a system of high relief raised very gradually and imperceptibly from the ground of the design, as if the lower part were molten into it, just a sharp edge or two being left to continue the lines to the eye. This kind of style is exhibited to some extent in the figures in the Hildesheim gates in the Architectural Court, and also in Ghiberti's *first* gates, which strike us as very superior in the adaptation of the material to his second ones, where he attempted too much, and took to picture-making in bronze,—a complete mistake in æsthetics, however the great beauty of the work may tempt us to overlook it in this case.

The severance of the catalogue of Oriental bronzes from the European ones, besides its obvious evil in multiplying books, takes away the opportunity for what might be very instructive, a consideration of the contrasts of style between Eastern and Western work of this class, especially in regard to the numerous and beautiful examples of Japanese bronze work in the Museum. Many of these examples are what Mr. Fortnum would, we suppose, call "Toreutic" work. They are not castings, that is to say, but hammered and incised, or engraved work, of great beauty of workmanship, and often exceedingly bad taste in design, a remark which may apply to some of the bronzes illustrated in the European catalogue also. Indeed, it is not a little singular to contrast the sentiments which issue from South Kensington, in regard to ornamental art, with some of the objects which are placed conspicuously there, presumably as models for admiration; which, at all events, are not in any way held up to reprobation in the catalogues. We spoke, the other day, of the exaggerated estimate of modern bad taste, in regard to such things as table utensils, made by a lecturer of the "Department." The exaggeration becomes still more striking when we notice that here, among these Japanese bronzes, are the most flagrant examples of the very bad taste which is stigmatised as peculiar to modern England; vessels of various kinds formed in the shape of birds and animals, with their backs taking off or hinged as lids: and among the objects figured in the European bronzes catalogue, nothing could probably be in worse taste, in regard to idea, than the German ewers (p. 114), or the lamp (4701, '59) on p. 7; nothing more *rococo* and unmeaning in design than the knocker (p. 158) or the key escutcheon (p. 171). All these may be, the German examples obviously are, excellent in workmanship, but in taste they are absolutely bad; yet not one word or hint of this is given to the inquiring student. It would almost seem as if the position assumed is that everything within the walls of the Museum is right, and everything outside wrong. It may be perfectly right, on historical grounds, to have specimens of every manner in which a material has been used in art; but an institution which aims so much at educational influence should certainly in that case teach the student to discriminate between what is true and what is false in taste, and not at all events select objects of the latter class for special illustration in a catalogue, in a manner which, without some modifying comment or criticism, amounts to a practical contradiction of its own teaching.

"Training Schools and Training Ships." Under this title Mr. Edmund E. Antrobus, F.S.A. (Staunton & Son), has issued another *brochure* urging the Government to support Captain Bedford Pim's present Bill. This, like the Bills of 1875 and 1876, is intended to establish county training schools and ships for the especial training of boys for the navy, the mercantile marine, and the army,—institutions, that is to say, for the reception of boys only who may be considered likely to prove efficient for one or other of these services. The schools to be similar to the County of Middlesex Industrial School at Feltham, which has, during the last five years, sent direct 414 boys into the Royal navy and the mercantile marine, and 234 into the army, independently of many other boys who, after leaving the institution, have adopted one or other of these services. By the proposed Bill a boy is to be received into a training school, or on board a training ship, only after due inquiry before magistrates in Petty Sessions as to his eligibility, qualifications, physique, and inclination, as would be done in an ordinary case of apprenticeship. Mr. Antrobus shows that the utter numerical insufficiency of the present training ships to supply the number of boys required for the mercantile marine, in addition to the number of apprentices, and the total absence of any school except the County of Middlesex Industrial School at Feltham and the Duke of York's at Chelsea, for the training of boys for the army, renders it imperative that the Government should support the Bill of the Member for Gravesend, or introduce some other measure of a comprehensive character for the consideration of the Legislature.

THE DIGNITY AND VALUE OF MANUAL LABOUR.

THE old world's ways of work were one thing, our modern and to-day's methods are quite another. The very earth itself is not more different, parcelled out as so much of it now is in cultivated plots of useful ground, to what it was when left of yore to Nature herself and to accident, than is the fine art in it of to-day, and the fine art as it was in the past, both in character and in method of production. We may pertinently ask for a few moments' attention to it, well worn as the ground of it would seem to be, after Mr. Gladstone's late talk about the "true dignity of manual labour," and the necessity there now is for attention to it, and to the mistakes made in reference thereto. Would that we had the power to afford to the great statesman additional texts for another "talk" about it. The subject-matter of it is not exhausted, that is certain; for the more it is looked into and analysed, the more vital and of greater import does it become.

It is difficult, indeed, to know well where to begin. Many things might be put first; but one has always struck us as of singular importance and weight. None will doubt the fact of the importance and vital necessity nowadays, and as things are, of *drawings* and representations on paper by other than the workmen. If there be, as we know there is, a "paradise of pens and ink," certain it is that there is a paradise of drawing-paper and drawing-apparatus. What could be done without "clerks," their apparatus, and surroundings? There must needs, without them, be an end of "business." What, again, would be done without plans on paper, and sections, and elevations, and drawings infinite of details? Their absence is simply inconceivable. But the time was when these things, and such as these, were simply impossible. It may, perhaps, be a little dangerous to go too far back in time for an illustration, but the proof it affords is too good to be missed note of. A huge simple pile of masonry, such as an Egyptian pyramid, had no *drawing* to guide the builders of it. One would almost as soon have thought of setting out one of the world's mountains, in plan and section, on dainty paper, as it. The builder of it, standing on the ground on which it was to grow up, must needs have gone to work forthwith, under the very eye, may be, of King Cheops himself, with but four wooden pegs and a long cord. The ponderous sepulchre, with its secret chambers, grew up under his personal direction, and guided by necessity, till the covering-slabs of marble were ready for the writer of the epitaph, who himself went to work, and wrote on it with iron chisel as on the paper page of a book. It was the work itself that was looked at, and the individuality and power of the producing artist was wholly centred on it. What a pity it is that these written coatings of the huge sepulchres of Egypt are gone! They were literally *written* upon; the artist-sculptor *wrote* on the stone page. Surely this was dignified labour, if ever there were such.

All well enough, many may say, as far as it goes, but pyramids are of the past, and quite exceptional performances; they cannot be repeated in the present, and do not afford a fair test to go by. Then take another kind of structure, from another country and people, quite as individualised as those of Egypt,—the Greek temple buildings. So much has been said and written about Greek architecture and Greek temples, that the subject would seem to be all but exhausted, and the secrets of it all found out; but it is not so. It is a singular fact, though but little practical note has been taken of it, that all the Greek temples are in idea of plan the same, but differently worked out, and differently "ornamented," if we may, in want of a better, use that term. That crowning effort of Greek temple building, the Parthenon itself, is in idea just what all the others were; and could we but see the great builder of it at his work, who designed it as if but turning over a new leaf of an old book thoroughly well worn and the contents of it known, we should be surprised, without doubt, at the simplicity of the process. A rough sort of man, Ictinus, its builder and setter out of the lines of it, was always on the ground, like a modern foreman. He must have been a "workman," that is at least certain. Had Mr. Gladstone,—who is such an adept in Greek matters and mysteries,—his mind's eye on this working man when he spoke of the "dignity of actual work"? No drawings on paper sent by another. It was labour and mind on the very spot itself that guided the work as it is, and was. How

much instruction and interest there would be in the daily account of the progress of these works, as column by column found a resting-place, and as the cornice got to be so far advanced as to be ready for the roof; and then, all being ready, there came the time when the bare marble was fairly fixed for the writer on it, not from paper drawings, but out of the sculptor himself, and by his own hand. That labour like that was "dignified" no one doubts, we may suppose, who will but look at the remains of it, as stored up in museums and collections, where it has all been carefully kept in the precise state in which it was found, and as left by the antique workman. It is fortunate, indeed, that we have such examples of work so close at hand, so that all doubts are dissipated at once on looking at them. We see how they were executed, all but as vividly as though we had seen the great workmen themselves at their work! Surely there was dignity in such work.

But it may be objected that this work in rough material, dignified though it may be, can hardly apply to the present state of things. We have no buildings on which a Phidias could well go to work, and no opportunity for the hands and brains of an Ictinus. Temple building is of the past, and not to return. Let us therefore take one more example, and that a more modest one, and one certainly more intelligible, and closer to modern doings, though a good way off still, it is to be feared.

Take common house-building,—common all the world over, and to all time. A modern row of houses of any pretence in great London town, would, indeed, it must be confessed, seem to need not a few dainty drawings to bring it into actual existence; and there can be but little doubt as to the distance and distinction between the actual "labourers" on it and those who point out the way for them. The house-building and ornamentation round and about huge London now going on may be glanced at. The rough men of the Middle Ages, certainly, imaginative as they were, never dreamed of such. But they built houses to live in too, and if we want to know what "picturesque" house-building means,—why back to Middle Age time we must need go for it. In not a few out-of-the-way spots in London many specimens of such may be seen yet, in spite of improvements. And well do such, rough as they are, bear the looking into, for in them every here and there may be noted the proofs of the "dignity" at that time of labour, in the instances to be noted in them of *after thoughts*, as the work went on.

It would be impossible to exaggerate the importance and dignity, and useful value, of *manual* work, or to say where the value of it ceases. We confine our thoughts, it is true, only to artistic work as to be seen in the builders' art, as it is in it more especially that the most intense and living interest in work, as work, is to be found. It is quite true that all useful work is, when not excessive in amount, pleasant, and certainly honourable, if not dignified; but it is in artistic *manual* work that mental labour enters at the same time the most largely, and thus makes it the more especially dignified and delightful. It matters but little in what material a workman may labour, or what style of art he may specially cultivate and make his own, or what even subordinate purpose his work may subserve. We well remember, in the crypt of a great cathedral church, finding once on a time a large number of rusting-away and disused metal coverings of old-fashioned oil lamps, used to light the church on dark days in days gone by, and before gas was thought of, and cast-iron brackets introduced all of one pattern. They were admirable specimens of dignified labour, most ingeniously designed and cleverly wrought out of thin iron plates; no two of them alike. They were probably the work of one man, and if so they evidenced how much may be done with very common material, and how much there is in *manual* work, for these lamp-covers most certainly had no drawings made of them; they came solely of the interest taken in them by the workman. Some few of them may yet exist.

Of the *artistic* value, then, of this great principle of the dignity of hand-work, as urged so usefully by Mr. Gladstone, there can most surely be no sort of doubt in the mind of any who will study the matter, and look into it so far as to see to what it points, and how particularly useful it may be made. What are really needed nowadays in art are men capable of both *hand* and *head* work, and who, as of old, will be proud to find in the *actual materials* provided by Nature blank, though beautiful surfaces on which to write, or to put the mark of their names. We can at present but imagine what this means, and would come to. *Ornamental* details, to use that general and wide term, are to be found everywhere, and all about us, in all materials, and of all sizes and degrees of costliness; but they are but glanced at generally as mere decoration and ornament, and then passed, perhaps, not to be further cared for. But were these details individualised, and, so to phrase it, each one of them "signed," then would they individually demand and would get attention, and, may be, study, from all who could feel interest in such matters at all. There is simply no limit to the ways in which such labour may be exercised, and no materials in which it may not find scope wherein to put forth its power. It is not in architecture and on buildings only that this is to be done, but in all and every object about us, from the coarsest and most cumbersome to the lightest and most delicate; from heavy furniture to light jewelry; from wrought iron plating to gold.

We may, indeed, wonder here for a moment not a little how it is that *manual* work has come to be considered as a something undignified, and as a something almost to be ashamed of, and to be if possible avoided, and to be thought of as if disjointed in some mysterious way or other from mental labour. To *indicate* for the manual worker, and to "superintend" him while at his work, no man is above; and the fact that in common occupations this can be effectively done, and this together in these days with the enormous increase of work to be done, and aided by machinery,—has without doubt led the world to suppose that the principle is of universal application, and can be carried to any length,—to art work, as to all other kinds and degrees. But this is most surely a fatal mistake, and but serves to show how much is due in this world to accident and the pressure of circumstances. It is *manual* labour, guided by *mental* labour, in the same individual, that makes real art-work possible and interesting, as we find it to be in the work of the past, however rude, or to whatever style of art it may belong, whether savage or civilised. It evidences always the individuality of the workman, and such work must always, in the very nature of things, be as "dignified" as hand-writing on paper! Might we not say, more so, for that consists of the perpetual repetition of the same forms, while handwriting in material must needs, in all artistic work, as perpetually vary? Of the dignity of manual work who can doubt who can see into the results of it? The working men have here a something to thank Mr. Gladstone for.

THE CLEVELAND DISTRICT.

SCRIVENOR'S "History of the Iron Trade" ascribes to the manufacture of iron this peculiar recommendation, "that it had arisen and flourished most in those parts of the country which Nature seemed to have doomed to everlasting sterility." This statement may have been true at the time at which it was written, and since then there have been several additional testimonials to its truth in the various iron-making districts that have arisen. Not the least striking of these is the district of Cleveland, which in little more than a score of years has risen to take the foremost place in the districts producing iron; and in it the growth of that great industry has practically changed the whole face of the country. The result is that no part of England has seen so vast a change in two scores as has that part of the North Riding of Yorkshire in which the iron trade has been as a magician making a "city of the solitude." Prior to the uprisal of that great industry, Cleveland was largely an unknown country. No railway pierced it, the trade had fallen away from it, its coast knew no port, manufactures were on a miniature scale, the towns were few, and the trade limited; and infrequent villages, and still more sparse hamlets and farmsteads, broke only occasionally the monotony of its wide moors, barren hills, and pastoral dales. In it, or on its borders, the little towns of Yarm and Whitby were decaying in importance,—the fisheries and manufactures of the last, and the commercial importance of the first, falling off. The alum trade was dying out at Guisborough and along the coast, linen-weaving and similar textile industries were fading out of importance, and the progress of agricultural science was impeded by the difficulty of communication. South Stockton had no existence; Middlesbrough, which had its commencement nearly half a century ago, was, up to the commencement of the iron manufacture, a small town, in which the ancient art of the potter had been planted, but in which other manufactures had scarcely taken root. With these and one or two similar exceptions, Cleveland was given up to the agriculturist, by whom the vast farms were tilled in old-fashioned custom. The hills in one or two instances were mined for jet, but with the exception of this primitive quarrying, they served with the rolling moors as pasturage for sheep, and occasionally the heath was disturbed by the sportsman, whose feet trod unwittingly on El Dorado. The population was limited, the trade was small, the resources generally undeveloped, and the great mineral treasures were, in their real worth, unsuspected and unutilised. Only about a third of the land was cultivated; what are now watering-places were aboriginal fishing-villages, and Cleveland thus kept on the even tenour of its way.

The growth of the iron trade was not, as it has been too often represented, the result of a mere accident; but it was, instead, the successful issue of a continuous search. The increasing demand for iron led to an inquiry after fresh fields of ironstone deposits. At last, after the completion of the line of railway from Pickering to Whitby, by which the seams of ironstone were laid bare, workings were commenced in the southern part of the district in a small way, and a continuous search was kept up for the main seam of the ironstone which was traced along the coast; and in 1853, some four or six miles from Middlesbrough, it was found at Eston by the late Mr. John Vaughan and Mr. Marley at the identical spot whence, years before, a quantity of the ironstone had been sent to distant blast-furnaces to be rejected. When this "commercial discovery" of the ironstone was made, immediate preparations to utilise it followed; and as it has been proved that the quantity is illimitable, these preparations have been extended, and the one mine at Eston has been followed until there are now two score in Cleveland, from which the output of ironstone has risen yearly, almost without a single check to the increase, until during the last year more than 6,000,000 tons of ironstone were sent out. From the first mines at Eston, which it was believed would yield 1,000 tons weekly, there has long been kept up an average output of not less than 500,000 tons yearly, and others of the Cleveland mines have acquired a productiveness to fully that extent. It was imagined for a time that some of the valleys would be found to be denuded, but it is found that the ironstone deposits are there also, and the area from which the vast output spoken of has been drawn has been almost yearly extended.

Naturally following in the wake of the development of the mining industry was that, first, of the crude iron trade and then of the finished iron manufacture. There were in the whole of the north of England iron districts, up to the date of the commercial discovery of the Cleveland ironstone, some thirty-six blast furnaces, none of which were in Cleveland proper,—most of them being on the banks of the Tyne and in the county of Northumberland, and the northern division of Durham. Following that discovery, blast furnaces were erected at Middlesbrough, at Eston, at Stockton, at Glaisdale in the south, and others have been added until there is now a range along the banks of the Tees from Stockton to the sea; until in Cleveland there are far on to a hundred, and until the number in the northern district has been raised from the thirty-six of which we have spoken to one hundred and sixty. By this increase, and by the enlargement of the dimensions and consequently in the capacity, the make of pig iron has been increased until it reached, last year, over 2,070,000 tons,—or close upon a third of the entire make of the whole of the United Kingdom. The secondary industry has grown as rapidly on the whole, though more unequally, and now, instead of the works for the manufacture of finished iron being of an extent represented by a productive power of some four hundred puddling furnaces, their capacity is now above five times that number. In these works, exclusive of the iron mines, it is within the mark to estimate the invested capital at over five millions sterling. And there has been a fully commensurate growth of subsidiary but still important branches of the iron trade,—the manufacture of tubes, wire, and other like industries; engineering establishments, shipbuilding yards, and similar works, until it may be stated that the northern boundary of Cleveland,—the river

Tees, is impinged on throughout its course there by Vulcan's workshops in every shape.

The result is seen first in the growth of towns: Middlesbrough has risen from a small manufacturing place of some 4,000 inhabitants to one of 50,000 people; South Stockton has known a growth, if not equal, still large; Guisbrough, the centre of the ironmining district, has emerged from a small village into a wealthy town, prospering by its surrounding iron mines; Lofthouse, which was a mere village, remote and slow, is acquiring the station, institutions, and appearance of a town; Saltburn, which twenty years ago was a hamlet, the few houses of which served as convenient centres for smugglers, is now transformed into a fashionable watering-place; and its neighbour, Redcar, is undergoing a similar transition on a more popular scale. And the whole of the mining district may be said to be studded with villages, either the enlarged hamlets of yore, or the newer-built embryo towns which have sprung up near the mouth of the pits, and in proximity to the works. Villages, such as Marske and Skelton,—known chiefly for their historical associations,—have become populous places now far advanced in the process which educes from the chrysalis state of hamlets into towns; decaying little spots such as Skinningrove have had their scores of people turned into hundreds, and the entire population of these mining districts has been many times multiplied. This replacement of barren moors by village-dotted fields; of heather-clad hills by others barer but tunnelled and almost honeycombed, in the search for iron ore; of winding, tortuous, and shallow streams, by broad, commercial streams; of a land then sacred to the carrier's cart and the less-frequent stage-coach, but now not only traversed by railways, but one which has become the chief source of income of one of the four great railways of England; and of one which was amongst the most sparsely-populated parts of the country, but now bids fair to become, so far as its eastern and northern portions are concerned, one of the most populous in the north. This change may be said to be one of the most extraordinary yet wrought by the uprisal of any industry within a period of little more than two dozen years. With the exception of the alum trade, which has died out, the older industries are yet carried on in what now seems their miniature mode; tanning and leather-dressing are still known at Guisborough and at Yarm, whilst paper-making preserves its old repute at the latter place; the jet miners are still counted by some fourscore in the southern spur of hills, and Staithes still preserves its repute as a fishing town. But these, with agriculture, are all dwarfed by the industry which is not only the greatest, but also the controlling, trade of Cleveland. It has built up its wealth, made some of its ironmasters millionaires, largely created the capital which is now invested in it, and given to what was a comparatively barren district the proud position of being the first iron-producing and iron-manufacturing district, so far as extent is concerned, in the world.

That position has been sorely tried by a period of trade depression of unusual length and severity, and by an apparent change in the material which railway companies prefer their rails made from. The result has been seen in a protracted period of financial testing, and there has been a consequent closing of a large number of works, more especially of those for the manufacture of iron rails, which have very much fallen in the estimation of railway companies. There is now a falling off in the demand for these, and that falling off is reflected in idle rolling-mills, in blast-furnaces no longer blowing, and in iron mines in which short time is now being worked, and it further shows itself in the diminished traffic receipts of the railways serving the district; but the quietude in trade and the stoppage of the development of mining enterprise allow time for much-needed perfection of sanitary arrangements, for the carrying out of a system of drainage of the mining districts, for extending to these a full and efficient water-supply, and for bringing them under the sway of local governing bodies, the latter of which has long been one of the most pressing needs of the district. Villages have grown up with little sanitary supervision, and the consequences of neglect in this respect, of over-crowding, and of a deficient supply of pure water, have been seen in a death-rate abnormally high, and one in which the deaths from the seven chief zymotic diseases have occupied far too prominent a place. In the town districts there has been much less to complain of on this score,—Middlesbrough, for instance, having spent large sums in the provision of efficient drainage, and more recently in the endeavour to obtain the control of, and to extend on a better principle, its water-supply, which has been hitherto drawn from the river Tees.

It is needless to point out the effect that this growth of appreciation of industrial resources has had on the constructive trades; it is sufficient to state that during recent years the growth was checked by the incapacity of builders to meet the demands for houses in the mining districts; and though this has been checked there is still known considerable activity in the constructive trades by reason of the efforts to overtake the needs of growing communities. And with the return of briskness to the great developing industry,—which is now looked forward to as an event whose distance cannot be great,—there will probably be known another bound forward in the trade of the north, and an addition thereto in industries not yet planted there, whilst these will find their due reflection in the increased prosperity of the districts in the upgrowth of new towns, and in the revival and extension of old villages.

PROFESSOR E. M. BARRY ON ARCHITECTURE.*

DOMESTIC ARCHITECTURE, FOURTEENTH CENTURY.

My last lecture brought down our review of English Domestic architecture to the close of the thirteenth century, a time when architecture in general was in a flourishing state in this country. Much of this prosperity was due to the personal influence of King Henry III., who did his best to induce foreign artists to settle in England, and who showed, by every means in his power, his anxiety for the advancement of art. To him succeeded the Edwards; and we will now briefly consider some of the architectural peculiarities of their time.

Referring to the older fashioned nomenclature of the periods of Gothic architecture, the period now under consideration is that which has been called the Decorated, and followed the Early English, which has already been discussed. It is not my wish to enter now into the many peculiarities of transitional work, and the numerous changes which gradually arose, causing each period to melt, so to speak, into its successor. I shall, however, attempt to point out some of the more obvious changes of detail, for the benefit of those students who have not investigated such questions as architects.

We are now approaching the more prosperous times of English history. Normans and Saxons had grown up together, and had intermarried with each other, and with the former inhabitants of the soil. Society was becoming gradually welded together, under the influence of a common faith and a powerful religious caste. Peace and prosperity are necessary for the construction of important works of architecture; without peace, there is no security to induce men to undertake difficult and lengthened operations; without prosperity there is a want of means to carry such works to a conclusion, as, unfortunately for architects, they cannot exercise their art without paymasters. The reign of the first Edward combined these requisites, though they were not as fully secured by his successors. Trade flourished, and wealth multiplied itself. London and the large towns gained in importance, and the communications with the Continent were increased and simplified; while some of the fairest portions of Northern France were among the happiest of the English king's dominions.

We have seen already that in England the arrangements of our domestic architecture were not very far advanced. In these things the French had the advantage, and the connexion between the two countries was not therefore without a considerable influence on the gradual enlargement of English ideas of civilisation and comfort. The manor-houses of the country gentry became more elaborate as new wants began to make themselves felt. The architectural details were multiplied, both in design and decoration. The hall asserted itself more and more as an architectural feature, and domestic offices were provided on a scale hitherto unthought of. Many of these changes were much assisted by French influence, as the great lords from France, who came to attend the English court, brought with them a numerous train of servants and dependents, accustomed to the handsome houses and good beds of their own land.

Until this period we have had to trace the advance of architecture, as regards public buildings, mainly in its ecclesiastical aspect. The bishops and monks were the chief patrons of architecture, and their comparative security and wealth had enabled them to indulge their tastes at a time when the rest of mankind had mainly to consider how to protect themselves from violence, cold, and hunger. The fourteenth century, however, is marked by progress in domestic, as well as in ecclesiastical buildings. Window-tracery, introduced in the preceding century, was heartily adopted, and pushed to a development. Numbers of lights were grouped together under a single arch, and the latter became filled with patterns of more or less intricacy. At first, such patterns were made up of circles, triangles, and the like, so that the style has been called Geometrical. In other cases, the whole space is occupied by irregular shapes, growing out of each other, or from a parent stem, a peculiarity which is known as the flowing, or Flamboyant style.

Many other changes arose, to which I shall have occasion to allude hereafter. They were all in the direction of greater freedom of design and ingenuity of construction. Among the more important houses of the time are the bishops' palaces. The bishop was not only an ecclesiastical, but also a secular prince, and his residence was accordingly on a large scale. Such remains as those at Wells, Norwich, and Lincoln, suffice to enable us to appreciate the state which was kept up by the bishops. Nor were the nobility behindhand. At Penshurst we find a structure of almost royal magnificence, partly, indeed, belonging to later times, but the most important portion of which, the hall, was erected in the Edwardian era.

It was at this period that English country-houses multiplied, and domestic wants began to be carefully considered. It was otherwise in France, where the best examples of the architecture of the day must be looked for in towns. This has been accounted for by the more disturbed state of the country districts of France, as compared with England, at the moment. France, moreover, from its geographical position, was more accessible to the influence which Rome and Italian civilisation brought to bear on art. England was a far-off land,—an island separated from other countries by stormy seas, and not readily approached, either in peace or war. The difference in the architecture of the two countries was strongly marked; and in one, we may turn our attention chiefly to the towns, and in the other, to the country, in respect of our present inquiry.

Apart, however, altogether from questions of public affairs, the divergence of customs may, I think, be referred to a cause lying deeper in national tendencies. In England, these tendencies have always pointed to country life and its pursuits. In France, the great towns have been looked upon as the central rallying-points of society. The latter have, therefore, received the fostering care of governments and individuals, and have called upon art, and especially architecture, to lavish its resources for their adornment.

In England the case has been different. Many of our large towns have suddenly arisen, because coal and iron were found near to them, and they were needed, as centres of manufacturing industry. London, as the capital, might have been expected to have occupied a different position, and it has doubtless done so to some extent. But the taste for field sports and a country life, and the care of great estates, have always induced the English aristocracy to give the capital a smaller share of their affections than they accord to their stately provincial homes; and even now it is difficult to arouse in them any enthusiasm for metropolitan improvements. London, with natural advantages almost unrivalled, has, until lately, been the ugliest of modern capitals, and though much has been recently done for its improvement, there is still a grand field for the reformer.

In the fourteenth century town houses were still constructed, as a rule, of wood, and they have consequently perished by fire or decay. In the country, stone was more readily accessible, and great buildings were erected near to the stone-quarries. Of course, there were many wooden buildings also in the country, and some of these remain to us; but the majority have passed

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away, and we shall find our inquiries much restricted, in consequence, to buildings of masonry. These were built in a solid manner, with walls from 3 ft. to 4 ft. thick, with buttresses and turrets. The roofs were of high pitch, having substantial and ample timbers. They were occasionally covered with wooden shingles or thatch, but the more permanent protection of slate, stone, or tiles, was now ordinarily adopted.

As regards the general plan, we find the great hall still supreme. This feature had been handed down from generation to generation from the days of the Romans, whose Atrium, covered to suit the climate, had set the fashion to their successors. The successive improvements in architecture had added to the importance of the hall. At first, narrow; and when wide, divided by columns; it now became a spacious and lofty apartment, the whole height of the building, as at Penshurst. Wings were thrown out from it, for the accommodation of the family, and towers were added for protection, and also for grandeur of architectural effect. Minor offices and stables were grouped around it, and at the sides; and a gatehouse placed opposite, so that the whole group of buildings formed a quadrangle, of more or less regularity, in which the chapel was not forgotten.

Protection was afforded by enclosing walls and turrets, and in some instances by moats. At Penshurst the enclosure was large, to afford space for the retainers and guests of the owner, and there was a wall with a moat outside. At Ightham, at Hever Castle in Kent, at Helmingham in Suffolk, and in other places, the moat closely surrounds the house, washes its walls, and is spanned by bridges to the principal entrance.

A tower, attached to Mediæval houses, was a mark of rank, and this feature was sometimes built separate, and of greater strength than the rest of the building. The towers may have been used as places of refuge, or depositories for valuable goods and records, in case of sudden tumult. In the northern districts, towards Scotland, which were exposed to the frequent raids of turbulent neighbours, the towers were of greater importance, and even gave the name to the whole structure. The tower, which in the Border counties was called the Pele tower, was, in fact, the rallying point of the district in case of need, and the inhabitants could shut themselves up in it, for a time, until any pressing danger were past. In such places the idea of a tower gave a great feeling of security, and there are good examples of houses, built of several stories in height, forming a tower with flanking turrets, and protected by a moat at the foot of the walls. One of them is to be seen in the case of Dacre Castle, in Cumberland.

With certain varieties, due to local causes, the gentlemen's houses of this period followed a general custom in their arrangement. We find, as the usual type, the hall and enclosure, with kitchen and other offices in it, mostly built of wood; a cellar, or chamber, under the hall, and a solar, or bed-chamber, on an upper floor, for the family. Sometimes a dungeon is added, with a guard-room for soldiers, and further rooms, to a greater or less degree, in accordance with the importance of the owner of the building. In unsettled districts the ground-floor is massive, and little pierced with windows, and when the latter exist they are often mere loopholes. Stone staircases were introduced, with newels, and windows and fireplaces were common in all private rooms. External stairs, which formed the principal means of approach in the Norman castles, were not suited to the more Domestic style now becoming common, and were gradually laid aside in favour of internal staircases. The principal doorways, in cases where the house was surrounded by a moat, was approached by a drawbridge, and defended by a portcullis, much as we see at the present time in fortified towns abroad.

Protection from casual external violence was still a question of great importance, but the advance of civilisation was, by degrees, bringing into greater prominence the more settled and domestic influences of family life, and these soon acted powerfully on the architecture of the day. In towns, the houses did not need to be castles. The walls, ditches, gates, and battlements, surrounding each important city, enabled the citizens to erect their houses, and carry on their business, in a feeling of security. Their buildings were consequently made, as we have already seen, of more flimsy materials than the country houses of the gentry, and, as a consequence, our knowledge of them is less. In some of the old towns of France, however, we find very interesting remains of timber houses, and those which are still left in England, even if they were mostly erected at a later date, are obviously built after the ancient manner.

In most cases, there was a high-pitched gable to the street, with stories projecting, one over another. The gables were often ornamented with carved or traceried barge-boards. The chimneys in town houses were commonly built in inside walls, and terminated in cylindrical shafts. The windows were protected at night by external shutters, which were often hinged to the transom of the window, so as to admit of being pushed open from the bottom, and thus serving to protect the opening from sun or rain in the daytime. At the time we are considering, coal was largely introduced into our towns, and became the ordinary fuel of the citizens, although at first, much objected to by them on the score of the dirt and disfigurement of the buildings which it caused. With them, however, as with us, the advantages and convenience of coal outweighed these objections, and it soon became an important article of commerce, and of daily domestic use.

External painting was adopted as a means of preserving cleanliness, and the Flemish habit of decorating their houses with bright colours was partially used in England. It has been already noticed that in the time of Henry III. polychromy of an elaborate character was practised, and we may therefore conclude that the houses of the great, in the fourteenth century, were ornamented in a similar manner. Looking at the general character of the latter, we shall find that there had been a general advance in comfort and refinement, although in these matters our ancestors were still far in arrear of any notions of the present day. The rich were beginning to gain from the experience of others, but the poor were still much as before, with rude and simple accommodation in their dwellings.

The feasting in the hall was marked by a coarse profusion, and the apartment was frequently used as a dormitory, as well as a dining-hall. The fire was still in the middle of the room, and a louvre, in the roof over it, formed its chimney. The furniture consisted of the necessary tables and benches, and any addition to these was for the high table only, placed on its dais, of one or two steps. From the upper end of the hall the lord and his party could withdraw into his private chamber, or solar, which sometimes overlooked the hall, by means of a small window. A music gallery was occasionally found, generally placed over the entrance corridor.

We have fortunately so many Mediæval halls remaining in this country that we experience no difficulty in understanding these arrangements, most of which have continued unaltered to the present day, and as the custom of dining in hall was tenaciously upheld, there is little difference between buildings of various dates, excepting as to the actual details of their architecture. Thus, we have in London a fine example of a hall at the Middle Temple, which, though of later date, is consistent in its plan and general design with all that we know of the halls of the fourteenth century. At Oxford and Cambridge, also, there are numerous and striking specimens of this important portion of a mediæval house.

The roofs were usually of timber, cleverly constructed, and sometimes richly decorated with carving, and also painted and gilded. In some rare cases, stone arches were adopted instead of wooden trusses. This is the case at Mayfield, in Sussex, then a country seat of the Archbishop of Canterbury, and there is a similar feature at Ightham Moat, Kent, before referred to. An arch of solid timber was also a favourite expedient, and this sometimes sprang from columns, as at Nursted Court, Kent. In other examples the walls were connected with tie-beams, which prevented the arched principals from thrusting out the walls. At Nursted this object is ingeniously attained by the horizontal beams, which extend from the walls to the feet of the arched principals, upon the capital of the columns. We may see in this arrangement the germ of the idea which was afterwards to expand into the daring designs of hammer-beam trusses, as in the present roof of Westminster Hall.

At Mayfield the hall was large, and handsome in its architectural features, as befitted the palace of an archbishop, given to hospitality, according to the custom and traditions of his high office. The dimensions were about 70 ft. in length, and 40 ft. in width, and there were numerous rooms in connexion with the hall, which have now fallen into decay. The exterior shows strong buttresses, which were necessary to resist the thrust of the arches of the roof. These arches are of stone, springing from carved corbels, and are themselves handsomely moulded. They are, of course, pointed in form, as at the time of their erection, the semicircular arch was no longer used. There are no remains of the timber roof which connected the arches and covered in the hall. It was probably boarded internally, and enriched by coloured decoration.

The Mayfield Hall may serve to give some notion of the style of the great houses of the time. Its details, whether of windows, doorways, or other features, are all of considerable beauty, and serve to indicate the importance of the primates, Mayfield being one of their favourite residences. The whole property was seized by Henry VIII. at the time of the Reformation, since which period, it has been altogether alienated from the see of Canterbury.

We may notice in the halls of this period a change which has taken place in the windows, enlarging their usefulness, and increasing their architectural effect. Tracery having been by this time heartily adopted by the architects of the day, naturally found a place in domestic, as well as in church architecture. As the halls gained in height, the windows were naturally lengthened, and the plain lancet openings increased in size and height. The next step was, therefore, to divide them, not only vertically, but also horizontally. The two-light window remained as before, the ordinary type in domestic work; but the massive central jamb and column disappeared, and were replaced by a mullion of moderate dimensions of section. The height, which would otherwise have been inconvenient, was bisected by a transom, with tracery; and the form of window, thus created, became common in the architecture of the day. The inner jambs and mullions were decorated with attached columns and mouldings, in a variety of ways, and the general design, as described, was so commonly adhered to, that we expect to find it, almost as a matter of course, in the secular buildings of this period. It may be repeated here that in such cases, the inner cill, which, in modern language, is called the window back, was not sloped as we see it in our cathedrals and churches, but was worked flat, so as to serve for a seat.

Glazing was still expensive and rare, and it was often applied in movable casements, which appear to have been capable of removal, so that their places might be occupied by wooden shutters, when the lord and his family were absent. As stained glass was now in constant use in the churches, we may suppose that it was not unknown in other buildings, but it must have been sparingly used, and there is little to guide us on this subject. Shutters were still common, both for security and for keeping out the cold, the latter being, we may be sure, no unimportant consideration in lofty halls, such as Penshurst and Mayfield. The fire in the middle of the room was often the only effectual means of warming, and for this reason, doubtless, it continued to be placed in the centre of the greater halls, long after chimneys and hearths were constructed in the walls of the private apartments.

Greater comfort was sought by the introduction of wooden panelling on the side walls, and above the wood-work there was ample scope for the art of the painter, who was busy now, as we have seen was the case in the preceding century.

Wall painting, however, soon encountered a powerful rival in the introduction of tapestry. This was due probably, in the first place, to foreign influence, as may be inferred indeed from the name of Arras. At first of great cost, tapestry was used only for places of special importance, as for the hangings to the king's throne; or the back of the dais in the halls of the nobles. In churches, such hangings had long been familiar. After a time, as the demand increased, the tapestries required were made in this country, although importation from abroad still continued, particularly in the case of the rarer and more costly stuffs. London and Norwich were the chief seats in England of this manufacture, but it was also carried on in other towns. The tapestries were embroidered with numerous devices, with figures, and representations of animals, such as leopards, eagles, griffins, and the like. The material was usually worsted, although richer stuffs were adopted on great occasions, and silk and velvet were not uncommon, particularly in France.

One reason why tapestries became popular,

was that they could be easily removed. A great personage, when travelling in those days, took with him the greater part of his goods and furniture. Beds were, as a matter of course, carried in his train, and by taking with him the tapestries which covered the walls of the rooms, much was added to the comfort of the traveller at the various resting-places on the road. Froissart says that the houses of the period were "hung with tapestries, representing various scenes and histories, to the delight of all beholders." This must have applied, at least in England, chiefly to the private chambers and bedrooms.

The halls were more commonly wainscoted with panelling, which in later times extended frequently to the ceiling. Against this panelling the benches were placed, when not in use at table, and from this custom arose hereafter the common practice of constructing fixed benches against the walls, as a part of the dado or wainscot. The benches served as couches at night, in cases when the hall was still used as a dormitory, and the early habits of our ancestors favoured this arrangement. The dinner was early, being served before midday, and there was a supper about five o'clock. These two repasts were the principal meals of the day, and it is curious to note that they accord with the practice of our French neighbours, at the present time. The dinner was often an occasion for state and pageantry, and in such cases it was protracted until a late hour, and was accompanied by music, followed by revels, masking, and minstrelsy.

In important halls there is commonly a recess, or bay window, near to the high table, where the plate could be displayed. The skill of the Mediæval goldsmiths was great, and the principal noblemen delighted to possess rare and beautiful objects in the precious metals. These precious things they carried about with them from place to place, not caring, probably, by leaving them at home, to put too much temptation in the way of the roving bands, which still infested many of the districts, in which their country seats were situated.

Plate was for ornament chiefly, as only the very rich could use it habitually. Pewter and wooden platters and drinking-horns were the utensils commonly seen on the dining-tables. The great salt-cellar was, however, always a conspicuous object, and the position of a guest, in relation to it, determined his precedence, and the favour he enjoyed with the lord of the feast. Great ingenuity and variety were introduced into the design of this important item of the furniture of the table. The older forms were generally those of massive cups, but these were succeeded by more fantastic shapes of animals, buildings, and the like. Another peculiar vessel was the ship, which contained spices and sweetmeats, the form of which may have been intended to suggest the foreign origin of many of these delicacies. The design of these ships was followed in later days, by the makers of porcelain, and some of their works modelled on the old design have been highly esteemed by collectors in modern times.

The habits at Mediæval dining-tables were significant of good fellowship rather than refinement. The wassail bowl went round for general use, and the food was taken in the fingers, and cut with the knife which each man carried with him. Knives and forks only came gradually into use, as wealth increased, and they then made their way downwards from the tables of the great, to those of the merchant and middle class. The great ewers with rose-water, with which we are familiar at City banquets, are the successors of those which were made in early times, and some of them are of considerable antiquity. The custom was not without its advantages, and, indeed, necessity, considering the mode of eating which has been described.

In Eastern countries at the present time, the habits of the table are not unlike those of our Mediæval forefathers. Each guest dips his hand in the dish, and the ewer is handed round, although in the use of the latter there is one important difference, for while the European may wash his hands in the dish, the more scrupulous Oriental will have water poured over him, and will not touch that which has been used, however slightly, by another person.

In the fourteenth century, to eat off the same board, and to drink out of the same cup, was considered a special honour conferred by the lord on his inferior. It shadowed forth the custom which still lingers amongst us, of the "loving cup," and of "taking wine" with each other, at table, the latter of which, as a sign of friendly hospitality, has only of late, and to the regret of many, come to be disused.

In some of the manuscripts of the period, we find interesting representations of the great dinners of the day. The lord on the dais, under his canopy, with his wife at his side, is surrounded by his guests, neighbours, and dependents. The high table, occupied on three sides only, is ornamented with costly plate. The chaplain is there to say grace, and ask a blessing on the feast. Minstrels and troubadours are ready to contribute their efforts to soothe, please, or excite, when called upon; and last, though not least, the fool or jester was at hand, with his jokes and wit, often, it may be feared of a questionable nature, to rouse the laughter and hearty mirth which we may suppose to have been characteristic of times which have handed down to us the name of our country, as "Merrye Englande."

The more private life of the nineteenth century does not favour these habits, but they are not altogether extinct at our public dinners, as, for example, the annual banquet of the Lord Mayor at the Guildhall, where many of the old customs are carefully maintained, having been handed down from generation to generation. One of them prescribes that the master of horse, or postillion, should always be at the right hand of the Lord Mayor, booted and spurred, with whip in hand, ready to conduct his master wherever State exigencies may require his presence.

The habit of dining together in a public manner was, as you are aware, common in the religious houses, and it naturally became the rule with other corporations, such as the great trade guilds, which were the foundation of our City Companies. It was likewise the fashion of the Court, and the great nobles therefore followed suite. It is a distinctive trait of Gothic, as opposed to Latin civilisation. We found, as you may remember, no traces of it in our examination of Pompeiian and Roman houses. In them, the dining-rooms or triclinia were small, and even in the later times of the falling Empire, the object of the Roman host was the fastidious and elegant enjoyment of the few, rather than a hospitality, extended to a numerous company, such as that which we have been describing.

It will readily be understood, from a consideration of the ordinary life of Mediæval times, why the hall was so important, architecturally, in our great houses, and we may have to notice, by and by, that the importance of the hall began to wane as the old system of hospitality came to be abandoned in favour of the more exclusive habits of modern days. The hall is now, as we know, an appendage only to the houses of the wealthy, and forms no longer a necessary and integral part of the structure.

In passing from the hall, to examine the other portions of the Domestic architecture of the fourteenth-century manor-house, mansion, or palace, we naturally come first to the chapel, which was seldom far from the hall, and often connected with it, by means of a passage or cloister. The architecture of the chapel was in accordance with the usual church-building designs of the time. The east window had usually three, and occasionally a greater number of lights, in contradistinction to the dual arrangement, typical of Domestic work. The altar was placed beneath the window. It was commonly of stone, and was sometimes formed of a projecting shelf of that material, and furnished with hangings. The usual arrangements of piscina, sedilia, and a receptacle for plate, are generally provided.

The lord's seat, or "pew," as it came afterwards to be called, is often on an upper floor, looking into the chapel from a higher level. Sometimes a screen divides the chapel into two parts, leaving the eastern space the whole height of the room, and dividing the western end into two heights, in which case the lower floor was used by the household, and the upper floor by the family. In important cases there existed an antechapel, over which the lord's pew was placed, and this arrangement lasted until a late period.

The chaplain was, we may be sure, an important person, responsible, to a great extent, for the manners and morals of the household. He was at hand to celebrate Mass, to hear confession, to say grace, and even to read at meals, while in domestic matters, he was ready to take the burden from his lord's shoulders, until he became, in after-times, the half-dependent, half-boon-companion, of whom Macaulay has drawn a not-too-flattering description.

The chapel was ordinarily a room in the house, though, sometimes, it occupied a wing, or tower, and more seldom was contained in a detached building in the quadrangle or courtyard. Attached to it, were priests' chambers for the use of the chaplain, whether resident or otherwise. When there was no resident chaplain, the chapel was frequently served by a friar, from a neighbouring monastery.

The parochial clergy looked with a certain jealousy on private chapels. They were at first a necessity, from the state of the country, and the distance apart from the parish churches, but as the latter came to be multiplied, the clergy attached to them not unnaturally wished to see the neighbours attend their own ministrations, and when application was made to the monasteries for clerical service, the old and never-dying jealousy between the regular and the parochial clergy, was ever ready to break out.

In the case of Crook Hall, Durham, the licence for the chapel still exists. It was issued by the bishop, and in order to maintain his power of control, it required renewal from year to year. Moreover, certain conditions were attached to the licence, and by them it was provided that the chapel was for private use only. The lord and his family were not to absent themselves from their parish church, but must attend the same, at least on the greater festivals, and on the day of dedication. All offerings were also to be made at the parish church, none being allowed in the private chapel of the hall.

The room over the western end of the chapel was often connected with the principal chamber. It had, usually, a fire-place, and could be shut off from the chapel by curtains, and in later times, by casements, so that it might be used for purposes unconnected with the chapel or with Divine service. It has been called the Oriel, or Oriole, a name frequently mentioned in the records of the time, but as to the exact meaning of which some doubt has existed.

As we now find numerous fireplaces in domestic architecture, the chimneys naturally became an important feature in external effect. No great changes were introduced in the forms of the fireplaces themselves. They continued to be, as before, corbelled out from the walls, with projecting hoods above them, more or less ornamentally treated. Such fireplaces are found in private rooms, and in halls of moderate size. In the larger examples, the older fashion of a central fire was still followed, as has already been said. Externally, the greater frequency of chimneys led the builders to tax their ingenuity as to their forms. The older shapes of square or cylindrical shafts became more varied and complicated, and chimneys were grouped together, carved, moulded, or otherwise ornamented. Where they were carried up singly, they were frequently made octagonal in plan, and were finished in the upper part, with gablets, battlements, and conical tops. In some cases, carving was freely introduced, and the chimney became an important architectural detail, and continued to be so, until Elizabethan days.

At present chimneys are one of the architect's greatest difficulties in large towns, as from the way in which buildings of different heights are crowded together, and from the general use of coal, the disposal of the smoke is often a problem not easy to solve, while its effect on our architecture is deplorable. Our ancestors appear to have been free from these troubles, and their records do not, so far as I am aware, contain any mention of the profession of chimney doctors.

As fireplaces were now common, the chambers had an amount of comfort not previously attained, and the bedrooms, in particular, were much improved, both in structure and furniture. As to the latter, beds and canopies were provided, and even baths. In rare cases, carpets for the floor began to appear, and there was a great advance in elegance and luxury. As a consequence, probably, of these changes, iron bars and bolts were found necessary for the protection of doors and windows, and many of these articles are very elaborate and beautiful; as, for example, the foliated hinges, often covering the whole surface of the door, which it thus protected and ornamented at the same time. Complicated and well-designed locks and bolts were also added, and in these things, and in grilles for windows, the English workmen showed great talent and skill.

While the family rooms were gaining in importance, the domestic offices naturally became sharers in the current improvements. In the tower-like houses, the offices were either included in the central building, or provided for in wooden sheds,

which could be abandoned on the approach of an enemy. In the more ordinary type of building, however, the kitchen, surrounded by its necessary adjuncts, was a separate structure, and formed one, or even two, sides of the quadrangle. The offices were necessarily extensive, for there were no purveyors to bring food to the door, and everything was provided from the estate. Corn had to be ground, and made into bread; meat to be killed, as well as cooked; and farmyards, stables, pigstyes, &c., had all to be arranged.

The famous abbot's kitchen at Glastonbury will give you an idea of the spaciousness, and even of the architectural magnificence, which the Mediæval kitchen could assume; and the abbot's kitchen at Durham is little inferior to it, and is of an earlier date. In the latter example, the fireplaces are placed round the walls of the interior, which is octangular on plan, and groined with stone. There is a central opening in the roof for ventilation. In large houses there were two or more kitchens, as there were also great and small halls, and in cases of exceptional magnificence of hospitality, the kitchens were supplemented by temporary structures, and even by cooking in the open air. In connexion with the kitchen were the buttery and pantry, generally near to the hall, as may be seen in examples at Oxford, Cambridge, and elsewhere.

The principal domestic arrangements having now been glanced at, it only remains to point out the changes which had arisen in the architecture of the period, some of which have been already indicated. These changes, as I have before explained, apply more or less to all buildings. The separation of domestic and church architecture is a modern device, and belongs to an unprogressive age in architecture. In Mediæval times no one doubted the excellence of the style of the day, and, as a consequence, there was no hesitation in applying it to all buildings, whatever their purpose. Let us see, therefore, what were the chief characteristics of the architecture of the fourteenth century.

Although it is convenient to retain the names which Rickman and others have adopted for the differing styles of Gothic in this country, we must admit that the title of Decorated is somewhat misleading. It may, perhaps, admit of some justification if we consider isolated details, but as regards architectural decoration, whether of the mass, or of the ornaments of a building, there was little to add to the perfection of many of the monuments of the preceding century, as you may see in the cases of Salisbury and Lincoln, to which I have before referred. Moreover, if surface decoration be considered, we find admirable examples in earlier times, in the richly-carved Norman doorways. In such cases, the execution is rude, and the architect relied for effect on the decorated aspect of the mass, with its concentric rings of enriched mouldings.

Closely allied with the Byzantine, and the Continental Romanesque schools, those elaborate doorways foreshadow the principles on which the architects of successive centuries worked, more especially in France, where the passion for deeply-recessed and highly-ornamented portals was always more strongly pronounced than in our own country. With us, such doorways were perhaps at their best in the fourteenth century. The jambs were ornamented with numerous shafts, having carved capitals, and well-moulded bases, while the mouldings above were beautifully carved, the sculpture being in many respects more imitative of nature, and natural objects, than it had been in Early English examples. There was, however, little of that direct imitation of such things, which some extol as the perfection of art, and desire to see in our works of to-day; for the Mediæval architects knew too well that architecture is a conventional art, to fall into such snares.

We have seen that in the thirteenth century the dogtooth ornament may serve as a distinguishing mark, and we now find a similar test detail in the ball-flower, used freely in what is called Decorated work. We find it in arches, cornices, corbels, and windows, either in its simplest form, or highly enriched, and with connecting stems, or bands of foliage. In the great examples of French doorways, the love of detail has perhaps somewhat overpowered that law of common sense to which architecture must bow, for when we approach one of them, as, for example, the western doorways of Rheims or Amiens cathedrals, it is found that the exceeding richness, which captivates at a distance, is to a great extent due to the introduction of niches, figures, and canopies following the curve of the arch, an arrangement apt to cause uncomfortable reflections, as to what may possibly happen to figures, placed in such a position of unstable equilibrium.

We have examples of this mode of decoration at home, but in most cases, with us, the niches and figures are on a smaller scale than in the French examples, and are suggestive rather of a moulding enriched, than of any constructional difficulty, or extravagance.

In tracing the variations of Mediæval styles, we do not expect to find any startling novelties; the workmen knew but one manner of working, and though a gradual change or improvement grew up, as it were, under their hands, they were not troubled by any outcry for a new style. It thus happens, that in Decorated work, the general forms of arches and doorways are little altered from those which were previously adopted, and it is chiefly in details that any change became felt. At first the dogtooth was used in connexion with the ballflower, afterwards it gave way to a carved flower or patera, of four leaves, based evidently on the old design. The mouldings became, at the same time, bolder in section and of larger size, while retaining much of the general character of the preceding style.

The columns, which, in small and unimportant works, are circular or octagonal on plan, continued in the cathedrals and great churches to be designed in clusters; but the shafts of such clustered columns were more essentially a part of the structure than had been formerly the case. Thus, in some fine examples, as at Exeter Cathedral, the effect of the pier with its clustered shafts is that of one massive column, enriched by vertical mouldings; while, in the choir at Westminster Abbey, on the other hand, we see separate shafts gathered around a large central column, which latter is obviously the support relied upon to sustain the superstructure.

There is little doubt, I think, that the fourteenth century manner is that which is most consonant with sound principles. However beautiful the clusters of separate columns may be, in themselves, there is an anomaly in dividing vertically, a pier which has to support a great weight, and there is a further constructional disadvantage in building such a pier of different materials, as marble and stone, which vary in their hardness, and power to support superincumbent weight.

In the piers which were in use in the Decorated period, this feeling would seem to have had its weight, as the cases of applied columns were rare, with exceptions, in the case of such details as wall arcades, and the shafts were, as a rule, an integral part of the structure, and worked out of the same stone as the mouldings. We miss also the free application of the single shaft, as seen, for example, in windows, such as those at the Temple Church, London, where the inner arches of the windows are carried on single shafts.

In the Decorated window, the shaft was reduced in importance, and became, as in the case of the piers, a part of the actual construction. Not that it disappeared, although many windows were designed without it. The shaft, with its capital and base, was too beautiful a detail to be readily laid aside, and we consequently find that it was abundantly employed in piers, mullions, jambs, and niches, subject, in most cases, to the modifications to which I have referred.

I have already noticed the development of windows and window tracery; but a few words of further reference to this subject may perhaps be useful. A powerful influence on this development was found in the improvement of the manufacture of glass, and the consequent introduction of coloured windows. How powerful this influence became we may see, by the examples of the great churches of France, the country which took the lead in the matter. Here, we find the windows growing in size and numbers, until solidity of construction appeared to be seriously jeopardised. Exaggerated clearstories became masses of painted glass, with scantity divisions of stone bars, and stability was provided for, not always satisfactorily, by the hidden expedients of buttresses, flying, and otherwise.

In England, our architects steered clear, for the most part, of this exaggeration, although we are not without examples of the application of the same ideas, as at Gloucester Cathedral in the great east window, which, however, belongs to a later date than that which we have now under review.

The Decorated windows were features of great importance in the architecture of the time. Beginning with the simple arches, trefoils, &c., inherited from the previous era, the window tracery became more elaborate, and gave opportunities for complicated design. This reached its climax in the flowing or Flamboyant style, which is probably the most ingenious manner of filling an arched window-opening that has ever been devised. This tracery has, however, the defect of appearing too clearly as constructed ornament, rather than ornamented construction, and there was ever a tendency to allow the fancy to run riot, and to set the dictates of good sense at defiance, by the adoption of forms remarkable rather for their quaintness and fantastic appearance, than for beauty of form and propriety of detail.

The well-known Jesse window at Dorchester, in Oxfordshire, is an illustration of my meaning in this respect. In it, the constructional requirements are sacrificed to an exuberance of detail, which being placed against the light, is in an unfavourable position, and one, moreover, which is unnecessary, on artistic grounds, because the same story might have been told better by sculpture, applied in other parts of the building. For examples of flowing tracery of a more self-restrained description, I may refer you to the east window at Carlisle, and the great west window of York Minster.

While admitting the ingenuity and often beauty of such designs, I, for one, cannot but regard with greater admiration the noble simplicity, and striking solidity of the lancet form, especially when enriched with the shafts and beautiful mouldings of Early English art. The recoil from the flowing lines of the great window-heads led directly to the introduction of the vertical lines, which marked the next period of so-called Perpendicular architecture.

I do not propose to trouble you, as I have said before, with all the minor details of differences between the styles, but I have, I hope, said enough to enable those of you who are not architects to distinguish between them. It only remains, therefore, to sum up the facts which we have ascertained to bear upon the domestic architecture of the fourteenth century.

We find, in the first place, a considerable advance in the requirements of social life, leading, as a direct consequence, to an increased development of architecture. Such development was found to consist, to a great extent, in the addition of extra features to the time-honoured types, a mode of proceeding in strict accordance with the genius of the English people.

Further, it has appeared that, in early times, as at the present day, the country was the natural home of the English gentleman, who delighted to expend his resources there, in the improvement of his estate, and the exercise of a bounteous hospitality; rather than to crowd into cities, and to vie in magnificence with his foreign contemporaries. We have further concluded that our architecture was controlled by circumstances of position, by the materials attainable, by the state of the country as regards security, and by other similar external considerations.

Subject to these limitations, the architecture was reasonable, beauty was realised, but not at the expense of convenience, as then understood; and any object sought to be attained was attempted in the simplest and most natural way. It is our task, gentlemen, both of honour and difficulty, to seek to apply similar principles to the architecture of to-day.

SOCIETY OF LADY ARTISTS.

IT is rather difficult to reconcile the existence of a special exhibition of Lady Artists with some of the views that are freely circulated now as to the equal position and powers of women as compared with men. We hear it frequently urged that women only require the recognition and opportunity granted to the other sex to show themselves their equals in science and art. But an exhibition for the works of ladies alone can only be established for one of two reasons; either to prove the superiority of lady artists to others, or as an indication that they wish to be judged,—and only claim to be judged, by a different standard from that which is assumed in judging of the works of artists of the other sex, or of exhibitions in which lady exhibitors occupy common ground with the rest. The first assumption we can hardly suppose to be the fact, and we must therefore conclude the second to hold good, that the ladies wish to be judged by a standard of their own. That this is the feeling would be

naturally concluded from the fact that those ladies whose powers enable them to compete successfully on equal terms in the leading miscellaneous exhibitions do not for the most part think it worth while to send their best works here. Miss E. Thompson, who can almost command her position at the Academy, is represented in Great Marlborough-street by some little things which are assuredly not adequate to her repute; Miss Starr, also an Academy exhibitor of some power and with promise of more, sends a head which is very pleasing and shows much feeling, but is hardly what she would wish to be judged by. While admiring the head, by the way, we must protest against accepting it as in any way a representation of "Miranda," and suspect it has been painted as a study and then named,—a practice rather too common.

Looking at the exhibition from this special point of view, it is a very good one, and perhaps would surprise some who are not aware of the extent and variety of the talent which ladies are spending upon this branch of art. Madame Bisschoff's broad and finely felt work, "The First Kiss" (61), would be sure of an honourable place in any exhibition-room; it is not here exhibited, we think, for the first time. Her sister, Miss Louise Swift, contributes one or two works of exceptional merit and power in their kind; the painting of four dogs gazing, in various phases of excitement, "After a Lark" (270), is as remarkable for the spirit and truthfulness with which each animal is represented as for the carefully studied diversity of character and action in the group; and her terrier in "An Anxious Moment" (301) of excitement over the intended destruction of a dragon-fly is perhaps still better. Mrs. Ward's painting of an "Incident in the Childhood of the Old Pretender" (595), was previously exhibited at the Royal Academy, and is well known; her friends will not fail to notice that the artistic associations with the family name are likely to be carried on by two other ladies who exhibit here,—Miss Flora and Miss Eva Ward,—of whose two works, 281 and 301, respectively, the last-named, "A Frost at Last," pleases us most. Miss Hilda Montalba sends a charming combination of figures and landscape under the title "Early Spring" (261); which also we seem to have seen before, however. Mrs. Marrable is a very industrious and able contributor of a large number of drawings, of which "Ober Pontresina" (440) and "Lago Maggiore" (488) are much the best and broadest in style of her landscapes, some of which, although showing a practised and ready hand, seem a little too much coloured according to rule. Among the works which have most speciality of style and treatment are Miss Walker's "Interiors in the Roman Campagna" (232, 339, 345), in which the influence of French art is evident, but the artist has original power. "Castle on the Banks of a Stream" (238), by Miss Kirschner, and Miss Assenbaum's "Still Leben" (385), are works of some force and individuality, qualities to be noted, since force is rather what is wanting in the average character of the exhibition. It is to be seen, however, in Miss Chadband's small work "Tribulation in Time of War" (661), and in the drawings that bear the name of Miss Marian Croft, who is certainly one of the most original and gifted among the members; we especially notice "Old Cottage, Ringmer" (165) and "Old Eastbourne" (464). Miss Kate Greenaway's "Little Walnut Girl" (426) is an admirable and conscientiously truthful study of real life and character, quite free from the mere "prettiness" which is too often (may we be pardoned for saying it?) a besetting sin of lady artists. Among others we notice Miss Hine's "Schoolfellows" (98), Miss Marian Edwards's "Ellin's Farm, Rudgwick" (128), Mrs. Heath's "On the Derwent" (127), Miss Belford's "Wellock's Mill" and Miss Partridge's "Old Lowestoft" (138, 139), Miss Margaret Rayner's "Ancient Drinking-Fountain at Ludlow" (178), Miss Deakin's "Rough Weather in the Grouse Season" (193), Mrs. Alma Tadema's "Fountain in the Villa Borghese" (289), Miss Ellen Partridge's "Breton Peasant" (323, a life-size head), Miss Powell's "Columnar Granite" (407), and the Hon. Mrs. Lowther's "Oaks at Amphill Park," a fine broadly-treated water-colour study. Miss Eley's old violoncello-player "Tuning-up" (198) is very clever and thoroughly studied in regard both to expression and accessories; and Miss Westbrook's "Ethel" (439) is a very pretty study, with some distinctive quality of colour. Among the smaller and slighter works are many of true artistic feeling, enough to spend some time over.

THE WILLIAM SMITH COLLECTION AT SOUTH KENSINGTON.

THE collection of drawings liberally bequeathed by the late Mr. William Smith, F.S.A., to the South Kensington Museum, and now open to the public in one of the picture galleries there, is one of some historical as well as artistic interest. It includes, that is to say, specimens of a style and date in water-colour art which, though we may not now consider them of the highest artistic value, represent a phase of the art which was important in its day, and has a claim to representation in our national collections. Into this category come such drawings as those by Edridge, of which several are to be seen; the style would be called very weak and conventional now, but it is only by comparison with such work that we estimate the progress, in manipulation at all events, which has been made in modern water-colour. The specimens by Varley and Girtin are very valuable, as the Kensington Museum is not very rich in these at present; and there are some exceptionally good specimens of Prout. Another kind of historical interest attaches to some drawings which, in addition to artistic excellence, have the recommendation of being records of what has now passed away, especially in regard to the picturesque of architecture. Pyne's drawing of "Taking Down the Houses on Old London Bridge" is a very fine and effective work in itself, and shows vividly the old-fashioned picturesqueness of that dear, old, dangerous, inconvenient structure, one of our last and longest preserved links of connexion with the days of picturesque and romantic architecture, in that golden age when sanitary laws and regulations were not, and no practical considerations or prosaic limitations of Building Acts fettered the free taste of the architect in the indulgence of his fancies. Stanfield's small and exquisitely-toned and finished little drawing of Waterloo Bridge, or rather its junction with the shore as seen from the water, is another interesting reminiscence, now that what was then water is dry land, and serves to remind us how much more picturesque and suitable to the situation the archway and steep stone stairs appeared when they ascended direct from the water, than now when they ascend from a flagged footway. Heavy as the bridge is, in fact, this portion was well designed for its situation, and loses by the change. There are some other interesting architectural views, some looking truthful, some we should say manifestly the reverse, such as the drawing, by Mr. Warren, of the Rock Fort at the mouth of the Mersey (Cheshire side), which the artist must have invented himself, for it has not the slightest resemblance to the real structure. There is a very fine specimen of Cotman's "The Mouth of the Thames," with that dirty brown tone in the water which he used with such effect under an ultramarine sky, and which we should conjecture he derived from his Yarmouth studies of sea water over extensive shallows and sandbanks.

There is a collection of books also bequeathed by Mr. Smith to the Art Library, including Vasari's lives, and other works of recognised standing and value in art-literature.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT the ordinary general meeting of this Institute on Monday evening last, the president, Mr. Charles Barry, in the chair, the following gentlemen were balloted for and duly elected, viz.:—As Fellows: Mr. E. H. Burnell, of Bedford-row; Mr. G. T. Hine, of Nottingham; Mr. G. T. Redmayne, of Manchester; and Mr. James Stevens, also of Manchester. As Associates: Mr. G. H. Bibby, of Manchester; and Mr. F. Wheeler, of Queen Victoria-street.

The President called attention to an autograph letter which had been received from H.R.H. the Prince of Wales, which was written to the Institute under the following circumstances. Sir Francis Grant, as President of the Royal Academy, had suggested to his Royal Highness that if he would write an autograph letter to the Academy inviting its members to become exhibitors at the Paris Exhibition of 1878, it would materially strengthen his (Sir Francis's) hands in the matter. The President of the Institute, feeling that the architects ought not to be behindhand any more than the painters, had asked the Prince to write a similar letter to the Institute, being assured that such a letter would very much stimulate the members to exert themselves, in view of the great personal interest which his Royal Highness was taking in reference to the Exhibition. The letter, which the President said would of course be preserved in the archives of the Institute, was as follows:—

"Marlborough House, Pall-mall, S.W.
7th March, 1877.

SIR,—As President of the Royal Commission for the Universal Exhibition to be held in Paris next year, I am anxious to take every measure to make such an Exhibition of Architectural Drawings as will do honour to the architects of the United Kingdom.

In furtherance of this object I beg you to have the goodness to bring under the notice of the members of the Institute of British Architects the importance which I attach to their co-operation in this matter.

I have requested Mr. P. Cunliffe Owen, the secretary of the Commission, to furnish you with any particulars you may require, and to him all applications for regulations and for information should be addressed.

I have the honour to be, Sir, your obedient Servant,
(Signed) ALBERT EDWARD,
President of the Royal Commission for the Paris Exhibition of 1878.

Charles Barry, Esq., F.S.A.,
President of the Royal Institute of British Architects."

The President announced that, with respect to the special meetings recently held for the purpose of considering the report of the Committee on the Improvement of the Institute, the report of the committee had been substantially adopted, together with the new bye-laws, which had now virtually become law. The Council had, however, had under consideration whether it would be advisable that the whole of the bye-laws should come into practical operation at once, even though legally they would do so. The Council had determined that the new bye-laws rendering it obligatory upon future candidates for membership to obtain four-fifths of the votes of Fellows present to ensure their election, &c., should come into operation henceforth; but it was not deemed advisable that the new regulations with regard to sessional papers and discussions thereon* should take effect until the commencement of next session.

The President said he had no doubt the members would be glad to hear that the portrait of the late President (Sir Geo. Gilbert Scott, R.A.) had been undertaken by Mr. George Richmond, R.A., who, as an old personal friend of Sir Gilbert's, would doubtless make the work a labour of love.

The President also announced that the visit of members to the British Museum to see the remains brought over by Mr. Wood of the Temple of Diana at Ephesus (which visit was suggested by Mr. C. T. Newton during the discussion on Mr. Wood's paper recently read before the Institute) would take place in a few weeks' time. Due notice of the date fixed upon would be announced to the members by means of the "notice papers."

It was further announced by the President that the Council and a number of London members of the Institute, having taken into consideration the suggestions made in the report of the Improvement Committee as to the advisability of refitting or remodelling the rooms of the Institute, towards the cost of which scheme the increased subscription of country members might be partly applied, felt that it was incumbent on London members to contribute their share towards the same object. With this view a subscription list had been opened, and contributions to the amount of 250*l.* had already been promised. The Council were sanguine that the amount would be increased to at least 1,000*l.* before the list closed.

With respect to the Commission on Copyright, now holding its sittings, the President announced that the Council, having addressed a letter to the Commissioners, suggesting that architects had some right to be heard on the question of copyright as affecting architectural designs, a reply was received, stating that the Commissioners would be glad to hear anything that architects had to say, whereupon the Council had deputed him (the president) to attend and give evidence. He had done so, to the best of his ability, and had made the strongest stand he could for the rights of architects. The evidence which he gave, together with the questions he was asked and the answers which he gave to them, were now in print; but, until the labours of the Commissioners were completed they were deemed to

* It has been decided that in future every paper read at the Institute shall be printed and circulated among the members generally before it is discussed. It is proposed to devote the first half of every ordinary general meeting to a discussion on the paper read at the previous meeting, and to let the rest of the time be occupied by the reading of the paper which is to be discussed at the next meeting. By this means it is thought that all delays in publication will be avoided, and that members will come prepared with definite opinions on the subject under consideration, and so enhance the value and importance of the discussions.

be private. At the same time, a printed copy was in the hands of the secretary of the Institute, and could be seen by those members who were particularly interested in the matter.

Among the donations to the library was a parcel of thirty-eight volumes given by Mr. Hardwick, this being his second donation of the kind. Many of the books included in the gift had long been wanted, and some of them were duplicate copies. Mr. Hansard, in reference to this matter, urged other members of the Institute to present duplicate copies of any architectural works they might possess, in order to form the nucleus of a lending-library.

Mr. T. H. Wyatt then read a short biographical sketch of the late Mr. T. Talbot Bury, V.P., whose career has been already mentioned in the *Builder* (p. 205, *ante*).

Mr. Dollman, who was called upon by the chairman, said he believed he was now, with the exception of Mr. Ferrey, the sole survivor of the five pupils of Pugin who had followed the architectural profession. As an old friend and fellow-pupil of the late Mr. Talbot Bury, he could only say how much he regretted the loss which his friends and the profession had sustained.

The Chairman said the best thanks of the meeting were due to Mr. Wyatt for the loving care with which he had endeavoured to place their deceased friend's merits before them. He (the chairman) felt it due to himself to say what a great loss the Institute had sustained by the death of Mr. Bury, who was elected vice-president only last year. Since he had been in office he had been of most essential service, especially as a member of the Committee on the Improvement of the Institute, in whose proceedings he took the most lively interest, and with whose report he most fully concurred. He could not but feel that Mr. Bury's devotion to his duty on that committee, necessitating his coming out in somewhat inclement weather while in ill-health, had hastened his end.

Mr. R. Herbert Carpenter then read a paper "On the Benedictine Abbey of St. Mary, Sherborne, with Notes on the Restoration of its Church," an abstract of which, together with the brief discussion which ensued, will be given in our next.

It was announced that the next ordinary general meeting would be held on Monday, the 9th of April, when a paper, entitled "Notes respecting some of the Condemned City Churches," prepared by a Sub-committee appointed by the "Committee for the Conservation of Monuments," will be read.

EXHIBITION OF THE ROYAL SCOTTISH ACADEMY.

IT is the practice to preface the catalogue of the Exhibition with a quotation, *ardentia verba*. The quotation this year (of which the ubiquitous "Smith" is the author) is as follows:—

"We are struck with admiration almost amounting to awe, when we contemplate a grand painting, a fine statue or a noble building, and feel a pride in our species when we term them the noblest productions of human art. But such objects have a still more sanctifying effect if we suffer them to raise our thought to Him who made the artist."

What, then, is a truly great work of art? It is something more than a mere specimen of manipulative dexterity: it is the visible expression of inward emotions, the manifestation, in a material form, of the intellectual appreciation of the Beautiful. The work of the true artist is but a humble reflex of the creations of invisible power; in producing it he ascends from the effect to the cause. He uses the power he has acquired to give expression to his deepest thoughts and his most subtle imaginings. He imparts to physical beauty an intellectual beauty, which alone satisfies the intelligence. He interprets the spiritual light thrown upon inanimate nature with feelings of delight far removed from what would ensue from mere mechanical drudgery. The phenomena of nature are ever varied, and their effect upon man is the greater on that account. The feeling of uncertainty, the knowledge that something may occur showing objects —whether animate or inanimate—in a light never seen before, gives zest and interest to the labours of him who endeavours to arrest and retain, in a visible form, these fleeting and ever-varied expressions.

In an annual exhibition such as this, the majority of the contributions to which each year consists of the works of the same individuals, it would be unreasonable to expect that each and all should display unerringly the same ratio of intelligence and degree of progress. There are some who at first give promise of future excellence; their earlier works may have exhibited the awkwardly-expressed efforts after truth, the first endeavour to embody the awakening sensations produced by the wonders of Nature. But it frequently happens that in after-attempts, when striving to get rid of crudity of execution, the spirit is not evoked; the light is not the light of the sun, the shadows are not such as he casts; the men and women are soulless images; the product stale, flat, and unprofitable.

These remarks may be taken as an explanation of the circumstance that, from time to time we have ceased to take notice of the works of certain artists which continue to be conspicuous objects in these annual exhibitions. In looking over the paintings we simply endeavour, as briefly as possible, to state the impression produced in our minds by the best of them, and to give a faint idea of what the artist means to represent, avoiding censure, unless when effrontery appears manifest.

There is about the usual percentage of well-known pictures re-exhibited. Remarkable amongst these is our old friend, "Sir Isumbras at the Ford." It is but a few years ago since Mr. Millais introduced him to us, and yet it seems long ago, "the adolescent has now become adult."

As we enter the cottage of Mr. Fildes's "Widower," we feel the transition from the artificial to the real. The artist has here struck the proper key, and at once enlists our sympathies. Engrossed with this mournful theme, our attention is arrested by a glare of colour close by; what is it? "The avenging Army of the Scots crossing the Solway into England during a thunderstorm at sunset. The front rank of spearmen on the dexter side of the picture are supposed to be singing some patriotic melody to the accompaniment of the pipers in front, while the distant thunder makes a fine obligato." A very fine obligato, indeed, Mr. Sam Bough! Your "early legal training"* enables you to see where to draw the line. If the music of the bagpipes were as far off as the distant thunder the harmony would be more complete.

Mr. Chalmers appears to have abandoned *genre* and to have devoted himself to landscape and portraiture, and in both lines he labours after a high ideal; his works abound in delicate touches and subtle gradations of tints. "Early Snow" is charming and suggestive: a few airy touches indicate the last lingerings of colour in the foliage after the manner of Corot (of whose work an example is exhibited), and towards whose dreary mysteriousness this artist shows a marked predilection. Mr. Chalmers's portraiture resembles that of Phillips in some respects, but in others it is strongly opposed; for one thing it has not the firmness and decision of the deceased painter's manner, but then it is more obviously refined.

Mr. Mactaggart works with great muscular energy, displaying a savage contempt for tea-tray trivialities. Sometimes too much so, perhaps. We have been unable, from any point of view, to apprehend his "Highland Burn,"—the landscape and the figures will not coalesce; but, at the proper distance, the conglomeration of sketches of colour in his "Bramble Gatherers" resolve themselves into masses of rich foliage; and "Nelly," when seen from afar, eclipses those surrounding her. Refinement is not incompatible with vigour, and a bias in that direction would elevate rather than depress the æsthetic proclivities of this able artist.

Mr. J. B. Macdonald keeps his nationality to the front; his scenes are always laid in his native glen, and present the Highlander in the heroic aspect. "Glencoe" represents a wife after the massacre finding her husband lying murdered,—

"With the gash upon his bosom,
And the frown upon his brow."

The drawing and grouping are well managed, but the colour is black, harsh, and entirely devoid of gradation of tint, in which respects this artist displays an inherent weakness.

The "Shylock and Jessica" of Mr. Robert Gavin has a look of reality about it. The figures are not studied from the hired models of the studio, but from the living reality of southern climes. Very piquante and graceful is the figure of Jessica, in her short robe of red and yellow, and the bright, warm sunshine seen through the half-opened door is rendered with good effect.

Mr. George Hay goes in for daintily-painted cabinet pictures of personages, in ancient costume, engaged generally in the pursuit of pleasure. The cavalier "Out for a Shot" stands on the *qui vive* in a snow-clad landscape, in a natural and easy position, and the whole work is carefully rendered and in good keeping.

In the subject from the "Legend of Montrose," "Annot Lyle playing the Harp to Angus M'Auly," Mr. W. E. Lockhart has succeeded in giving to the figure of the brooding, distracted Highlander a look of reality. Both expression and attitude carry out the impression produced upon the reader of the legend by the character of the man. The same cannot, however, be said as to the figures of Annot Lyle and Monteith, who each play a part in the scene, and the background of tapestry is harshly rendered. Mr. Lockhart displays much power in the rendering of character in "The Parish Kirk," in which the varied expression and attitude of the worshippers is happily hit off, and the quaint ugliness of the interior is lighted up in a skilful manner.

Mr. Otto Leyde, although generally devoting himself to portrait-painting, indulges now and then in *genre*, and he has never been more effective than in "On Stryke," where an obstinate-looking carpenter sits brooding over a newspaper, and his careworn wife looks reproachfully at him as she is going to dispose of his tools from their deplenished habitation.

We do not quite realise the position sought to be delineated by Mr. J. R. Reid in his "Rustic Spelling Bee." The figures are few and scattered, and their relation to the centre figure, who presides, does not appear obvious. The chief merit of the picture lies in the vivid realisation of open-air effect, and the subtlety of light and shade amongst the early summer foliage which closes in the group.

The same effect, with greater distance, is given in a landscape by Mr. David Murray, "Forbidden Pasture," representing a flock of sheep which have strayed into a field of oats besprinkled with poppies; and he is equally successful in "Weedbrook," where meadows, water, pollards, and geese are aptly rendered. The name of this artist is new to us; if he is at the beginning of his career he promises to take a high rank as a landscape-painter.

Mr. W. B. Hole is a man of culture; his *rôle* ranges through Classical, Mediæval, and modern themes. His perceptive powers are in advance of the executive, but he never commits the error of confounding the poetic with the pictorial in his subjects. "A Wounded Enemy" represents the well-worn theme of a cavalier being tenderly administered to by a peasant woman in her hut, but in "His Lordship" we have a modern story plainly told of a delicate aristocratic stripling who varies the monotony of his existence by paying a visit in his bath-chair to the forge of the blacksmith upon the estate, who receives him with due courtesy.

We are pleased to see that Mr. John Smart is not degenerating into mannerism as he threatened to do, and finds that there are more phases of nature worth depicting than one. There is much freshness "Among the Yellow Corn." The hill clad with luscious mossy verdure, which forms the background, is beautifully painted, and the feeling of repose pervading the scene happily rendered.

Mr. T. Graham's "Sorrow in the Tent,"—two gipsy women bemourning a death which has occurred within their fragile dwelling,—is a fine piece of brush work, remarkable for the brilliancy and harmony of its colouring, but defective as to the sentiment intended to be conveyed. We prefer Mr. Graham's work when he makes the landscape his chief aim.

Our space is as short as our theme is long. We give way to the necessity of the position.

The Exhibition, as a whole, is indicative of progress. While nothing great has been produced, there is little that can be classed as coarse and vulgar, and much that is worthy of admiration.

* Vide his speech at the Academy dinner. Mr. Sam Bough proposed "The College of Justice," having, he remarked, been asked to do so out of regard to his early legal training. (Loud laughter.) He said the time had passed by for summary justice, and now no sane person had any doubt of the integrity and honour of those gentlemen who were our gracious Sovereign Lady's vice-gerents in the land. That our noble college would long maintain its high character was the prayer of every honest Scotchman; and if they had such as now adorned the bench, gentlemen alike renowned for their knowledge of the law and their love of art and literature, he believed that they need not doubt for the future, and that it might proudly be said Scotland would be Scotland yet.

The New Stations at York and Middlesbrough. — The platforms, to the extent of 140,000 ft. super. are being paved 1 in. in thickness by Claridge's Patent Asphalte Company.

HALF-YEARLY REVIEW OF THE RAILWAY COMPANIES.

THE several railway companies have just concluded their meetings for the half-year ending with December last, and the proceedings of many of the leading companies disclose two marked features—the falling off of traffic, in several instances owing to depression of trade, and the enormous increase in the cost of railway construction.

At the meeting of the *London and North-Western Company* it was announced that there was a falling off of traffic within the half-year to the extent of 30,000*l*. This the chairman attributed partly to the depressed state of trade in the country, and to a certain extent owing to "the legitimate abstraction of a portion of our traffic by the Midland extension to Scotland and elsewhere." Adverting to expenditure on new works, the Chairman observed that they could not hope that the capital account could be closed. It was impossible. They were bound to provide for the wants of the community,—stations and the doubling of the line for carrying the traffic properly. During the two years when the prices of labour and material were extremely high, the directors of the company held their hands, and did as little as they could, and they had now got somewhat behind. They should have been thankful if their Liverpool Station had been ready a year ago, and it was not ready yet. But at present capital did not go as far as it did ten years ago, within 50 per cent. During the past half-year they had kept up the line, and not only so, but they had had to increase expenditure for many large works that would not come every year. They had had to put a new pair of gates to the Garston Docks, which had cost something like 8,000*l*. They had had to remove the wagon shops from Campden, and the horse sanatorium, and the shareholders would see a sum of about 65,000*l*. against 47,900*l*. or 48,000*l*. in the previous year. They had had to do a great deal more of extra work than they had ever done before. They had altogether about 1,400 miles laid with steel rails, and within a year or two the shareholders would not only feel the benefit of the lower price, but the better wear and tear of those rails. Adverting to the company's rolling stock, he said that during the half-year they added 25 new engines, and rebuilt 42 engines; whilst they had put new tubes into 90 engines. The average life of their whole stock of engines was 10½ years. He added that included amongst them was the "Cornwall" and the "Velocipede," two engines close upon thirty years old, which were running to-day, and were likely to run for many years to come. "There is no limit," said he, "to the life of an engine if you are satisfied with the type." During the half-year they had added 73 entirely new wagons, and rebuilt 760. Referring to the block system, he said that they had adopted the absolute block. They had about 55 miles only remaining of the permissive block, which they had had for many years. For a good number of years they had been adding the absolute block, and the interlocking system, long before it was thought of as a public matter, and they had at the present moment over 1,000 miles of railway worked upon the absolute block system. The cost was something like 200,000*l*. or 300,000*l*. a year more than under the old system; still they were bound to do everything that they could for the safety of the public. The report of Mr. Baker, the chief engineer, with respect to the works in progress on different parts of the company's system, detailed their present state. The Primrose-hill tunnel he reports to be all but finished. On the Seaton and Wansford branch, where a million cubic yards of excavation is required, nine bridges are in progress. The widening of the line between Longsight and Hardwick (Manchester) involves the construction of a viaduct containing fifty-seven piers and arches, and forty-four of these have already been built. The enlargement of the Lime-street Station at Liverpool is making rapid progress. The works at Holyhead for the enlargement of the inner harbour are also being vigorously carried out. Out of 492,000 cubic yards of excavation 190,000 cubic yards have already been removed, and of 800 lineal yards of quay wall 440 yards are finished. One of the heaviest portions of the new works which the company have in hand is the making of the Coed and Festiniog line in Wales, which contains a tunnel 3,872 yards in length, or upwards of two miles. Mr. Baker reports that the three shafts for the construction of this tunnel have already been sunk to their required average depth of 115 yards each.

Unlike the London and North Western Company, the half-year's traffic of the *Midland* shows an increase of 93,110*l*., the increase applying to passengers, and every description of merchandise, with the exception of minerals, on which there was a decrease. At the meeting the chairman observed that there could be no doubt whatever that the receipts from passenger traffic would have been considerably larger but for the general depression in the trade of the country. As it was, the addition to the passenger traffic was 67,961*l*. The company's total capital, including loans, now stands at 63,825,502*l*. During the half-year the expenditure on lines open for traffic was 796,000*l*. On the purchase of additional lands in various places 197,000*l*. had been expended, and of this large amount of land nearly one half the expenditure had been at Bradford, for the increasing traffic of that important town. About 90,000*l*. had also been paid during the half-year on account of the new locomotive and carriage shops at Derby. The chairman said the expenditure upon these shops had been very large indeed. When fitted with machinery the whole outlay would not be less than half a million sterling. They would be amongst the finest shops, if not the finest, of any in this kingdom. There had been expended 376,000*l*. on lines in course of construction; 245,000*l*. for additional working stock; and 335,000*l*. in payments to lines in which the company were partners, making a total outlay of capital in the half-year of 1,753,000*l*. The estimate of the further expenditure of capital account for the current half-year was 1,500,000*l*. The chairman did not think it possible to keep down the capital expenditure in the present half-year below that sum. Adverting to their Bills now before Parliament, he made the following important statement respecting the greatly increased cost of railway construction in this country within the last few years. "The Bills deposited for the ensuing session," he observed, "do not authorise any extension of the Midland system. The fact is, as I have said from this place repeatedly, the cost of all new railway works is now so seriously increased that it is impossible to construct railways at anything like the cost at which they were constructed ten years ago. A railway which cost 30,000*l*. a mile seven or eight years ago, would now certainly cost 50,000*l*. That being so, it is absolutely necessary, both for this company and for others, that a pause should take place in the construction of new railways; and I do not think that, for some time to come, any very great extent of new railways will be projected in this kingdom." In answer to a question as to the cost of the St. Pancras Hotel, the chairman said that as the hotel was now complete, the shareholders were entitled to know what it had cost. It was a large amount. The buildings had cost 304,355*l*.; the decorations and fittings, 49,000*l*.; and the furnishing, 84,000*l*.; the total cost being 438,000*l*. The hotel was carried on by the company itself, the profits, after paying the manager a commission on the net proceeds, going into the coffers of the company, and so far the result was satisfactory.

The *Great Northern Company's* report states that the net decrease in traffic receipts as compared with the corresponding half-year preceding amounts to 6,743*l*. The falling off is attributed partly to the closing of the Alexandra Palace, and partly to the opening of the Midland Company's new Scotch route. The capital expenditure during the half-year was 850,577*l*, of which 242,794*l*. were spent on lines open. The chairman stated that the greatest outlay had been upon the two additional tunnels near to King's-cross. They led into the narrow throat which conducted all the goods and passenger-traffic into King's-cross. The Copenhagen, or main tunnel, would be ready for opening in May. On lines in course of construction 372,895*l*. had been expended, and of that sum 283,000*l*. had been spent on the new Derbyshire lines. The chairman dwelt upon the large expenditure which had been incurred in the block and interlocking systems, amounting to nearly 300,000*l*. A few years ago the signalmen on the Great Northern system numbered 200, and now they number 800. With respect to further capital expenditure the estimate was 4,485,000*l*., of which 3,000,000*l*. would have to be expended on the new lines in Derbyshire, Leicestershire, and Yorkshire, which would give the company access to the three important towns of Leicester, Derby, and Burton-on-Trent. The present capital of the company was stated to stand at 27,334,125*l*.

The *North-Eastern Company's* report states that there was a decrease in the passenger traffic receipts as compared with the previous half-year, amounting to 39,038*l*., and also a decrease in merchandise traffic of 18,648*l*., both of which were attributed to trade depression. The company's present capital stood at 54,414,628*l*. During the half-year 961,137*l*. had been expended on lines open and on new lines in progress. With the new docks in formation at West Hartlepool, and the railways in connexion with them, the contractors were making satisfactory progress. In conjunction with the London and North-Western Company, the company were making an extensive enlargement at the joint station at Leeds.

At the meeting of the *South Eastern Company* the chairman, adverting to the accident at Folkestone and Dover, observed that on the 1st of January we had one of the most fearful storms in the Channel that perhaps ever was known. The company sustained damage at Dover to the extent of about 2,000*l*., and a similar amount at Folkestone, whilst the damage to the great Admiralty pier would have to be made good by the British taxpayer. Blocks of stone of twenty tons weight were positively shifted by the force and violence of the waves. The traffic receipts showed a falling off in the gross revenue of 5,000*l*.

The *Great Western* traffic returns show a decrease in passenger traffic as compared with the corresponding half-year of 1875, of 12,952*l*., but an increase in merchandise of 46,644*l*., and in minerals of 28,376*l*., giving a net increase of 62,068*l*. The engineer reports that the heading for the Severn tunnel has now been carried under the whole of the deep water of the shorts, passing in this portion through compact Pennant rock. The practicability of the works, he adds, having thus far been satisfactorily tested, instructions have been given for the preparation of the necessary plans, drawings, and specifications, with the view of tenders being obtained for the construction of the tunnel. The report adds that the Bristol Harbour and Railway, and the new goods and passenger station at Bristol, are fast approaching completion. The engineer states that the several works in progress have been very unfavourably affected by the severe weather and the recent floods. The shareholders at the meeting voted 241,950*l*. to be spent in station enlargements and improvements during the current six months.

It transpired at the meeting of the *Great Eastern Company* that the passenger receipts had increased by about 24,000*l*., whilst the number of passengers had increased by about one million. On the other hand, the expenditure for maintenance of way had diminished, but recent floods and other expenses which had been thrown upon them had increased the total amount. The Chairman stated that the capital expenditure for the half-year had been somewhat in excess of the estimated amount, which had arisen from the desire of the directors to complete those large improvements in the neighbourhood of Stratford. When completed, there would be four lines of rails—two for main line traffic, and two for Woolwich traffic, and the local traffic beyond. The estimates of capital expended for the current half-year had relation in great part to the conversion of the Bishopsgate-street Station for goods traffic, and to improvements in the harbour at Harwich. By the first process they would ultimately save 17,850*l*. in annual expenditure, besides securing a rental of 4,000*l*. a year for arches. By the Harwich improvements 7,500*l*. would be annually saved, and a revenue would be derived from the tonnage of vessels and traffic brought to the line.

At the meeting of the *London and Brighton Company* it was stated that "bad times" had prejudicially affected the revenue during the past half-year, and prevented many from travelling. Still they had been able to keep up their dividend. Specifications were now being prepared for the Tunbridge Wells and Eastbourne line, and the Chairman said he had no doubt the Brighton Company would complete the line within the time specified.

At the meeting of the *South-Western Company* it was stated that notwithstanding the stagnation in trade which had prevailed, there was a gross increase in the traffic for the half-year as compared with the corresponding period of 1875 of 49,616*l*. The report alluded to the activity with which the new works at Waterloo and Nine Elms were being prosecuted.

The report of the *London, Chatham, and Dover Company* attributed a great loss of traffic during

the past half-year to the failure in the hop and fruit crops in Kent. But notwithstanding these causes there was an increase of 8,028*l.* in their receipts during the half-year.

The report of the *Metropolitan Company* showed an increase in the traffic receipts of 9,939*l.* The report also stated with reference to the Aldgate extension recently opened, that Messrs. Lucas & Aird became entitled to a proportionate part of the bonus which the directors agreed they should be paid in the event of the works being completed and handed over to the company, ready for opening, before the 1st of December.——The chairman of the *Metropolitan District* stated at the meeting of that company that there was a slight increase in their traffic receipts, with which he was not satisfied. He found, however, that all metropolitan suburban lines had suffered partly from the general depression which had prevailed, and partly from the excessive wet weather. There had been eighty-five wet days during the half-year, and nearly every Sunday happened to be a wet day. The Richmond extension, from Hammersmith to Shaftesbury-road, was progressing satisfactorily, and was expected to be ready for opening this month (March).

The traffic receipts of the *North London Company* for the half-year amounted to 195,021*l.*, showing an increase of 6,838*l.* The chairman said that during the half-year the company had expended on capital account 36,815*l.* on the docks and the widening of the line. But they would yet require 145,000*l.* to carry out the works. This capital, however, was to receive six per cent. interest from the London and North-Western, the Great Western, and the Great Northern Companies, who required the accommodation which the company was about to provide.

At the meeting of the *East London Company* the chairman stated that there had never been any leakages from the Thames into the tunnel. The water which flooded the line some time back had leaked in from the Commercial Dock, but it was speedily stopped, and the tunnel was now as dry as ever. The chief discussion at the meeting turned upon the alleged unfair manner in which the London and Brighton Company is treating the East London as respects the development of its traffic.

The *Lancashire and Yorkshire Company's* proceedings showed that whilst during the past half-year there was a falling off in the receipts from passenger traffic, there was an increase from merchandise and minerals. The sum of 834,839*l.* had been spent during the half-year on existing lines and new works. Amongst other works which the company are constructing are the new docks at Fleetwood, which are almost completed, and are expected to be ready for opening early in summer.

EDINBURGH.

A CORRESPONDENCE has taken place between the Treasury and Sir Alexander Grant, the principal of the University, relative to a proposed grant of 80,000*l.*, which the Government have conditionally agreed to recommend to Parliament towards the extension of the buildings of the University.

The estimated cost of the proposed new buildings and alterations upon the existing premises is 261,500*l.* The amount subscribed by the public towards carrying out this scheme is 82,000*l.*, and my lords of the Treasury ask whether, in the event of a grant of 80,000*l.* being made by Parliament, the remainder of the funds will be forthcoming from other sources. In reply, the principal refers to a report of the architect, who suggests "a series of alternative courses," of which the most trenchant would involve stripping the building of every architectural feature. "The committee do not think it would be consistent with their duty to adopt this course. They feel that the proposed buildings would not be appropriate if they had not some academical, and therefore architectural, character;" and, after consideration, they have resolved to "adopt the third alternative suggested by the architect, and to reduce the scheme, for the present, to the erection and fitting up of the new scientific buildings required for the medical faculty, and to carrying out necessary improvements in the existing University buildings:—

"Thus, the hall and tower, although the former is much wanted for University meetings, and the latter forms an important feature in the architect's design, will be postponed as not being immediate necessities for the purposes of instruction, and will be left to form the object for a fresh subscription list or for testamentary liberality from time to time.

By this postponement a reduction of the estimates for site, building, and architect's fee will be effected to the amount of no less than 69,000*l.*, and at the same time this reduction will be effected 'without any sacrifice of the additional facilities for instruction which are necessary.'

The committee also propose to make a further saving of 5,000*l.* by postponing the proposed external improvement for the present University buildings.

In accordance, therefore, with the terms of your letter, we now come before their Lordships with a revised and reduced scheme, which confines itself to the erection of those scientific buildings for the University of Edinburgh the necessity of which was affirmed by the Duke of Devonshire's Commission, and to internal improvement of the present teaching accommodation of the University.

The original estimate amounted to 261,500*l.*, out of which a sum of 30,000*l.* to 40,000*l.* was due to the sudden and great rise in the cost of building in Scotland, which took place after the committee had commenced their proceedings. As shown above, we propose to strike off or postpone 74,000*l.* of that estimate, leaving a proposed expenditure of 187,500*l.*

To meet this we have subscriptions promised, and nearly all paid, to the amount of over 82,000*l.* This, with the addition of a Parliamentary grant of 80,000*l.*, would amount to 162,000*l.*, leaving 25,500*l.* to be still provided.

The committee are of opinion, and they authorise me to say this in their name, that under the encouragement which will be afforded by the gracious approval of Her Majesty's Government, and with the renewed interest in the scheme which will be caused by the commencement of the works, there is reason to expect that fresh subscriptions will be forthcoming, and that within four or five years the requisite additional sum of 25,500*l.* will be provided.

The committee pledge themselves to use their best endeavours to secure this result, and considering the favourable disposition already shown by the public, they think that there is no doubt of their ultimate success."

The liberality of the Edinburgh public as regards such matters is worthy of remark. The sum of 100,000*l.* required for a new infirmary had just been subscribed and a commencement to the buildings made when this new scheme was mooted, and a sum of 82,000*l.* was in a short time subscribed; and this, too, in a city not remarkable for the wealth of its inhabitants.

The suburbs of the city are extending rapidly towards the south and south-west, and the new buildings comprise a great variety of villas, both as regards style and accommodation, ranging in cost from 600*l.* to 6,000*l.* each. The total cost of these recent erections is estimated by the *Scotsman* at 1,358,544*l.* As a general rule, they are erected by speculators, and possess little or no architectural character; but at intervals the attention is arrested by an example (generally built for the proprietor) where the aim has been after something more than mere utility.

Plans and estimates have been received by the School Board for two new schools. One of these is to be erected upon a plot of about half an acre in extent in Cranston-street, one of the new streets embraced in the city improvement trust, in Canongate district. The buildings have been designed by Mr. Hamilton Beattie in the Scot-Flemish style, and take the form of the letter E. They have a frontage of 130 ft., a breadth of 54 ft., and a height of 90 ft. The ground-floor is converted into a covered playground, and above this are three stories lighted by mullioned windows. The gables are crowstepped, and the central one is finished by a belfry, below which is carved a representation of the insignia of the Board. Accommodation is provided for 810 pupils, being about 100 less than the Government regulation. The accessories are similar to those of the schools already erected.

The original plan showed two flanking towers, but these were objected to on the score of cost. The reduced building was estimated at 7,400*l.*, but the actual estimates are 600*l.* below that sum; and an effort has been made by Mr. Gowans, one of the members of the Board, to have the design carried out in its entirety, as the building will be seen from the North Bridge and the road to Portobello, in combination with other features in the picturesque quarter of the old town.

The other school is also designed by Mr. Beattie, and is to be erected at Dalry-road. Ground in that locality is not so valuable as within the city, and it has been resolved that this school shall differ from the others, and consist of only one story. Accommodation is provided for 700 pupils, at a cost of 6,000*l.* The elevations are plain in character.

Moray House, one of the finest historical mansions in the Canongate, was, some time after the "disruption," purchased by the Free Church and converted into a training college. There was a large terrace-garden facing the south, which is now used as a playground. Upon this ground is to be erected a new school, having a frontage of 110 feet by a breadth of 45 feet. Owing to the rapid fall of the ground, it is found necessary to erect a basement story, and this are to be utilised as a covered playground. Above this are to be placed two stories containing four rooms, each measuring 40 feet by 20 feet, with a height of 15 feet. Lavatories, cloak rooms, &c., are to be provided. Architectural effect is sought merely by the use of mouldings, and the treatment of the roof, which is to be varied by the introduction of gabled ventilators. The estimated cost of the building is 5,400*l.*

Dalry House, which until lately stood within its own grounds at the west end, is now hemmed in by streets of a third-rate order. It has been purchased by the Episcopal Church, and is to be re-arranged internally and added to, with the view of fitting it for a training college. Accommodation is to be provided for thirty students.

Mr. Robertson, of the Board of Works, London, is to be the successor of the late Mr. Matheson as Surveyor for Scotland.

THE NEW "BON MARCHÉ" BUILDINGS AT BRIXTON.

THE large and handsome new market building at Brixton, or the "Bon Marché," which the proprietor has named the premises, are fast approaching completion, and are intended to be opened on the 1st of April. They have been in course of erection for about eighteen months past, and when completed will have cost upwards of 70,000*l.*, exclusive of the land. The buildings have been erected and internally arranged on the principle of some similar establishments in Paris, and when opened they will form a novelty in market accommodation in the metropolis, embracing the sale of almost every imaginable article in food, furniture, and dress, under one management, the whole of the *employés* residing on the premises in a large block which has been specially erected for them, and which has a direct internal connexion with the main building. The site occupies an area of nearly an acre in extent, with its main frontage to Brixton-road, nearly opposite the Chatham and Dover station, and bounded on the south side by the railway, and on the north side by Shepherd's-lane.

Both the main frontages to the building,—the one facing Brixton-road, and the other Shepherd's-lane,—have some architectural pretensions, the latter being the most prominent of the two, in consequence of being surmounted by lofty Mansard roofs. The Brixton-road frontage is 125 ft. in length, and contains two lofty stories above the ground-floor, the height of the main body of the elevation being 50 ft. from the street line, whilst the central portion is carried several feet higher, and surmounted by a semi-circular arch enclosing a clock, with vases at each angle. Immediately underneath the arch is a panel in black slate, 4 ft. in depth, and about 12 ft. in length, on which is inscribed, in large gilt capitals, the French title selected for the building, "Bon Marché," and it may be added that there are similar inscriptions carved in stone over each of the entrances to the building, and likewise in coloured glass at the head of all the ground-floor windows, both in the Brixton-road and Shepherd's-lane frontages. There are two entrances from Brixton-road, each 11 ft. wide and 13 ft. high, with red polished granite pilasters on each side, and a shaft in similar material in the centre, the pilasters, as well as the central shaft, resting on a base of polished grey granite. The ground elevation also contains a range of six windows of similar dimensions, each window being filled in with plate glass in one sheet. The rest of this portion of the elevation consists of Portland stone piers, columns, and window-heads, having richly-sculptured keys containing fruit and floral devices. The upper portions of the frontage are in red brick with Portland stone dressings and ranges of eight lofty windows to each floor. At the foot of the second-floor windows there are two projecting balconies in stone resting upon a stone bed built into the wall, the projecting portion upon which the stone floor of the balcony rests being sculptured to represent a huge shell. The return elevation in Shepherd's-lane, to the extent of 70 ft. in depth, is uniform with the Brixton frontage, there being a third entrance at the angle of the two elevations. Beyond this the Shepherd's-lane frontage is carried to a still further depth of 40 ft., with Mansard roof 80 ft. in height from the ground line. Immediately under the Mansard roof is an immense tank, capable of containing 6,000 gallons of water, with hydrants attached, communicating with every part of the building in case of fire. At the rear of the main building, and directly

communicating with it, is what is called the domestic block before referred to, for those employed in the establishment. It covers an area of 9,000 superficial feet, and is five stories in height. It contains upwards of 100 apartments, and includes two large dining-rooms for males and females, together with dayrooms, the manager's apartments, male and female visitors' rooms, library, billiard, and other recreation rooms, and upwards of fifty bedrooms.

A portion of the north side of the ground-floor, as well as that part of the basement fronting Brixton-road, are set apart as shops or stores connected with varied trades, whilst the remaining part of the ground floor, 100 ft. by 65 ft., and the whole of the upper floors, each form one immense apartment, in which businesses, comprising departments of all kinds, will be transacted. A spacious staircase, 22 ft. square, with a central flight of stone steps, 6 ft. wide, and two similar flights on each side, leads to the upper floors. The building throughout is heated by hot-water pipes from an apparatus in the basement, which has been supplied by Messrs. Benham, of Wigmore-street.

Messrs. H. Parsons & Rawlings, of Lambeth, are the architects of the building, and Mr. Brass is the contractor. Mr. J. B. Halliday has superintended the erection of the structure as clerk and foreman of the works.

LANDING STAGE, BIRKENHEAD.

LIVERPOOL ENGINEERING SOCIETY.

ON Wednesday, the 14th inst., this Society held its thirty-fourth meeting at the Royal Institution, Colquitt-street, Mr. M. E. Yeatman, vice-president, in the chair. A paper, on the "Design and Construction of the South Reserve Landing Stage and Piers, at Birkenhead," was read by Mr. Graham Smith, A.I.C.E. This floating landing-stage, which has recently been constructed by the Dock Board, is situated in the Mersey, between the Morpeth and Alfred Dock entrances. It is 352 ft. long and 72 ft. wide, and has been designed partly as a substitute for that which existed in the low-water basin, previously to its conversion into a wet dock, and which was devoted to the use of the London and North-Western and the Great Western Railway companies, and to facilitate the coasting traffic coming to that portion of the estate. In sinking the piles forming the piers considerable difficulties were met with, as the sandbank was found to contain numerous large stones and fragments of rock, which had been artificially deposited from time to time, and gradually covered as the bank increased. These stones for a long time resisted all efforts to get the piles down, but ultimately they were sunk to the required depth by the water-jet system. The whole of the undertaking was carried out from the designs and under the supervision of Mr. Lyster, engineer-in-chief, Mr. Graham Smith acting under him in the capacity of "resident engineer." The contractors, Messrs. Emmerson & Murgatroyd, of Stockport, were represented by Mr. William Thomson. The subject was well brought before the meeting, and was illustrated by numerous wall plans and diagrams.

The Proposed Application of the Artisans' Dwellings Act to Sheffield.—A communication has been received from the Local Government Board in reference to the proposed application of the Artisans' Dwellings Act to Sheffield. About fifteen months ago a requisition was signed by several ratepayers in favour of the demolition of about a fourth part of the town. The proposal was forwarded to the Medical Officer of Health, who took certain proceedings which the Act renders necessary. These for the most part consist of personal inspection of the districts scheduled, an examination of all the houses therein, and the getting up of a mass of statistics as to dimensions of rooms, number of inmates, and so on. It appears that only one-third of the district has yet been gone through, and that at the present rate of progress it will take three or four years longer to complete the inquiry. The Health Committee lay some stress upon the fact that some of the most filthy and disreputable haunts of the town have been left out of this proposed scheme, and they consider that the memorialists have included districts where a change for the better is not so urgently called for.

THE SESSIONS HOUSE OF THE ESTATES OF THE RHINE PROVINCE.

DÜSSELDORF, which is, of all Rhenish cities, perhaps most favoured by nature by its public park-like grounds and small lakes lying in the centre of the town, has also outstripped already many of its neighbours by the many improvements which human hands may effect in beautifying a town. The visitor to the home of Rhenish art will see in the modern parts of the city all the requirements of recent times. Broad, well-paved streets and footpaths, necessary for a large and constantly-increasing traffic, have been laid out; tramways connect the different parts of the city; waterworks and conduits, as well as a well-planned system of drainage, contribute to give to it a clean and pleasant appearance. The metropolis of Rhenish art has, besides, shown by the establishment of horticultural and zoological gardens that it is earnestly endeavouring to follow the footsteps of its elder sister, Köln. Only in one respect has it remained behind its neighbour. Düsseldorf is yet greatly deficient in buildings of a monumental nature, which, of all others, give to a city a characteristic stamp. But great and satisfactory progress has been made in this direction within recent years. Amongst these new constructions, the City Theatre, designed by the architect Giese, of Dresden,* the new Academy of Arts, designed by the architect Riffart, and the Sessions House of the estates of the Rhine Province (of which we give an illustration in this number), are an earnest of the desire to excel also in this direction.

The Provincial Estates of Rhenish Prussia formerly held their sittings in the rooms of the northern wing of the old Academy of Arts, and after its destruction by fire, in the aula of the Realschule of the city; but the accommodation there has always been found insufficient, and the Estates resolved to erect a new building more appropriate to the purpose. It is now being erected, after the designs of the architect Julius Raschdorff, of Cologne, near the Kaiserteich. The foundation-stone was laid last May, and it is intended to complete the buildings within two years from that time, the estimated expense being 1,000,000 marks (50,000*l.*). The site has been generously presented by the city, and faces one of its most pleasant and most frequented promenades.

As regards the interior of the building, which is erected in the style of Italian Renaissance, it contains, besides the necessary offices for the provincial administration of the Rhine Province, and the sessions halls, to be beautifully decorated, of the Rhenish Provincial Estates, the residences of the Landes director of the Rhine Province, and of the higher officials of the provincial administration.

Should the new buildings be completed in the magnificent style proposed, this would indirectly advance the prosperity of Düsseldorf. By promoting the embellishment of the "Athens of the Rhine" it will still more be made the resort of *rentiers, littérateurs*, and art-loving well-to-do people generally.

INFIRMARY FOR ST. GEORGE'S UNION, FULHAM-ROAD.

THIS building is erected for the accommodation of the whole of the sick poor of the St. George's, Hanover-square, Union, which includes twenty-one parishes and a population of 155,000. It is situated on the south side of the Fulham-road, upon the spot were formerly stood the residence of the Earls of Shaftesbury.

The foundation-stone of the building was laid on the 26th of July last, by Mr. Hugh Seymour, the chairman to the Board of Guardians.

The building is intended to accommodate 840 inmates, and is planned upon the pavilion system. It has seven blocks or pavilions, each four stories high, all connected on the ground-floor by a corridor running the entire length of the building. This corridor commences at the first pavilion flanking the road, on the ground-floor of which are the doctors' rooms, committee-rooms, &c., and a passage-way leading to the resident medical officer's house and the chapel.

This front pavilion is varied from the others by the addition of a large tower, containing a cistern for the supply of the hydraulic lifts attached to each pavilion. On the right hand of the tower are placed the entrances to the building; that on the left being the patients' entrance; that on the right the cartway entrance to the administrative offices, stores, &c.; as also to the residences of the officers, laundry, kitchen, and so on. The other pavilions are all similar, and each contains a fireproof staircase of vaulted brick surrounding the well of the hydraulic lift; and on each floor there is a large ward to accommodate twenty-eight patients, with a separation ward for four patients. There are nurses' rooms, sculleries, and offices attached to each ward.

The chapel fronts the Fulham-road, and will accommodate 600. The house standing between the front pavilion and the chapel is the medical officer's residence.

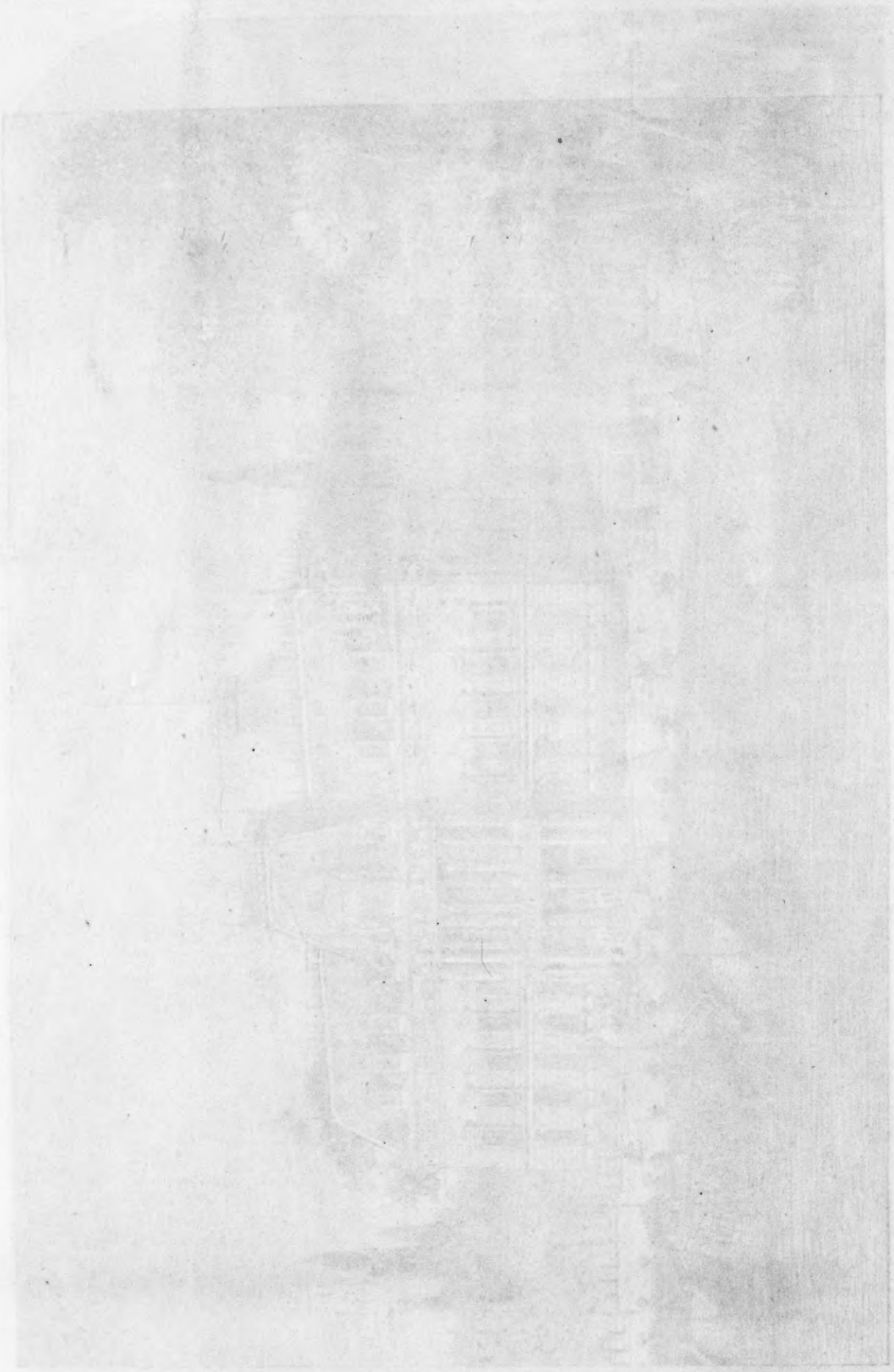
The architect is Mr. H. Saxon Snell; and Messrs. Wall, Brothers, are the builders. Mr. Thompson is the clerk of works.

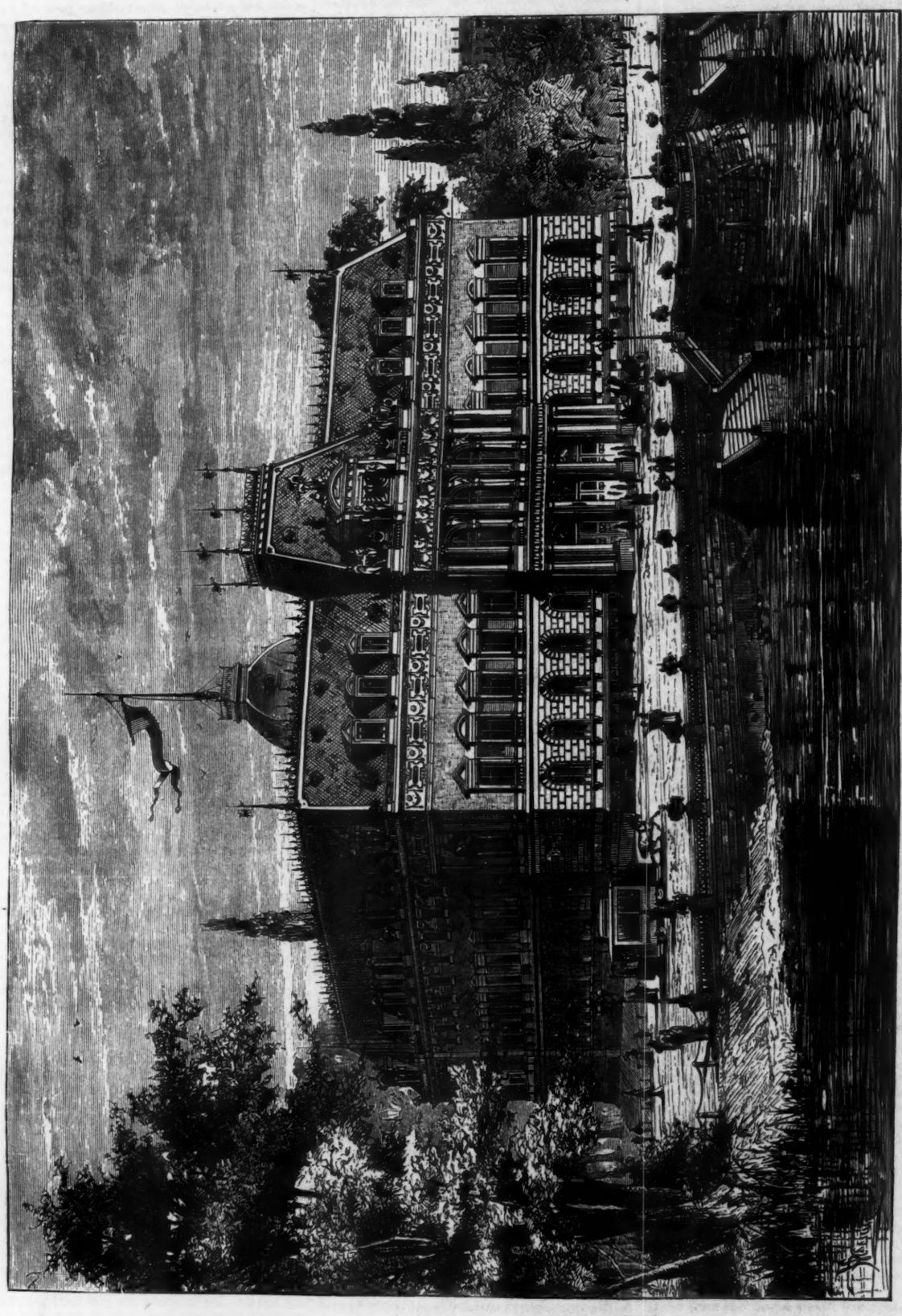
* Illustrated in the *Builder*, vol. xxxiv., p. 168.

BARROW-IN-FURNESS COMPETITIONS.

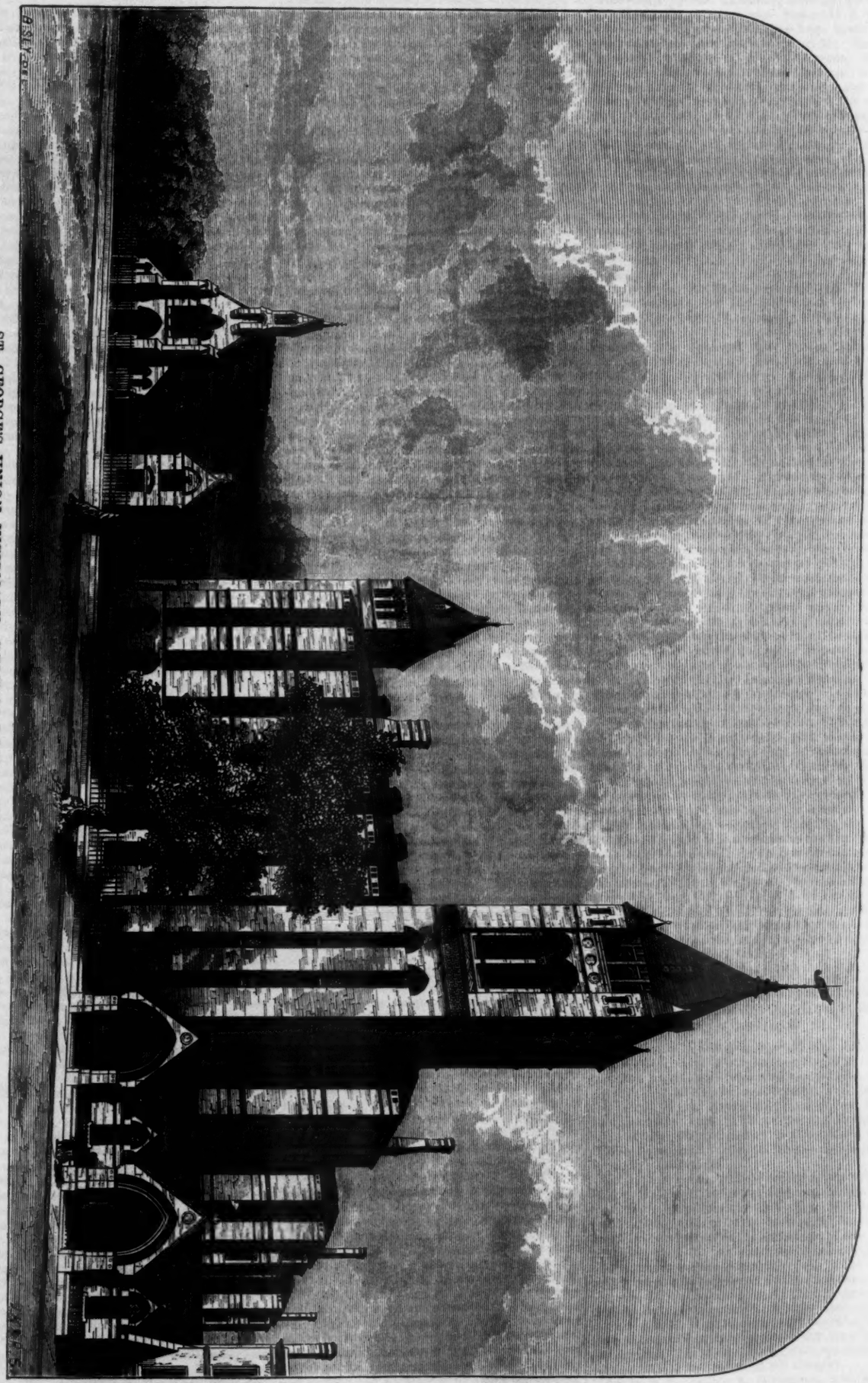
A *faux pas* of the Barrow corporation, with regard to the architects' plans for the proposed new town-hall, and for the new workhouse, has ended in a mess that must cause that body to feel vexed with themselves, and that has inflicted, although unintentionally on their part, an injury upon Messrs. Paley & Austin, of Lancaster, architects. The steps that have led to this are definite enough. Barrow needs a new town-hall, and the union a new workhouse; the corporation has to provide the one, and the board of guardians the other. The corporation and the guardians, respectively, invited architects to send in plans for the town-hall, and for the workhouse. While the competition was in progress in the architects' offices, a junota of the corporation, well satisfied, presumably, with the professional skill and capabilities of Messrs. Paley & Austin, entered into what seems to have been an unauthorised compact with these gentlemen, the terms being, that they (Messrs. P. & A.) be chosen as architects for the town-hall without competition, and that they withdraw from the workhouse competition, which would be left open to local architects. The party who made this arrangement induced the council to ratify it by a resolution. This decision raised an outcry among the Barrow architects, and evoked a protest from them against their being precluded from competing for the town-hall. The council seem to have felt that they had made a mistake, and taken a course that was condemned by the public. They retraced their steps, rescinded the resolution, and again threw the Town-hall plans open to competition. Another phase of the case shows further strong reasons why Messrs. Paley & Austin should say, "Save us from our friends." They had withdrawn their competing plans for the new workhouse, but not at the request, or on the suggestion, of the board of guardians, who properly hold that the town council possesses no power or right to dictate as to what architects may and which may not compete in the matter of plans for the new workhouse. Feeling that an injustice has been done to Messrs. Paley & Austin, an attempt was made at the last meeting of the board of guardians (a number of the guardians being on the town council also), to reinstate these gentlemen as competitors for the workhouse. A motion was proposed, seconded, and lost, to the effect that Messrs. Paley & Austin's plans be sent up, with instructions that they be considered before Mr. Thompson, the arbitrator, gives his award. The ground of opposition to this motion was chiefly that these gentlemen cannot now, after all that is publicly known of the affair, compete upon equal terms; and that their plans, if sent in now, may be distinguished or known, not by a motto, but by the name of the firm virtually written on the outer cover.

Enlargement of the Finchley Cemetery. — The Islington Vestry and the Burial Board have resolved upon making a considerable addition to the unconsecrated portion. At the meeting of the vestry held last week a communication from the Burial Board was read, suggesting that the vestry should consent to the purchase of fifty additional acres of land adjoining the present cemetery, and also that the Burial Board be permitted to borrow the sum of 10,000*l.* for the purpose. A further letter was also read from the clerk to the Burial Board to the effect that the Board proposed to purchase 107 acres from the Strawberry-vale estate, at an estimated cost of 20,000*l.*, and this was confirmed.

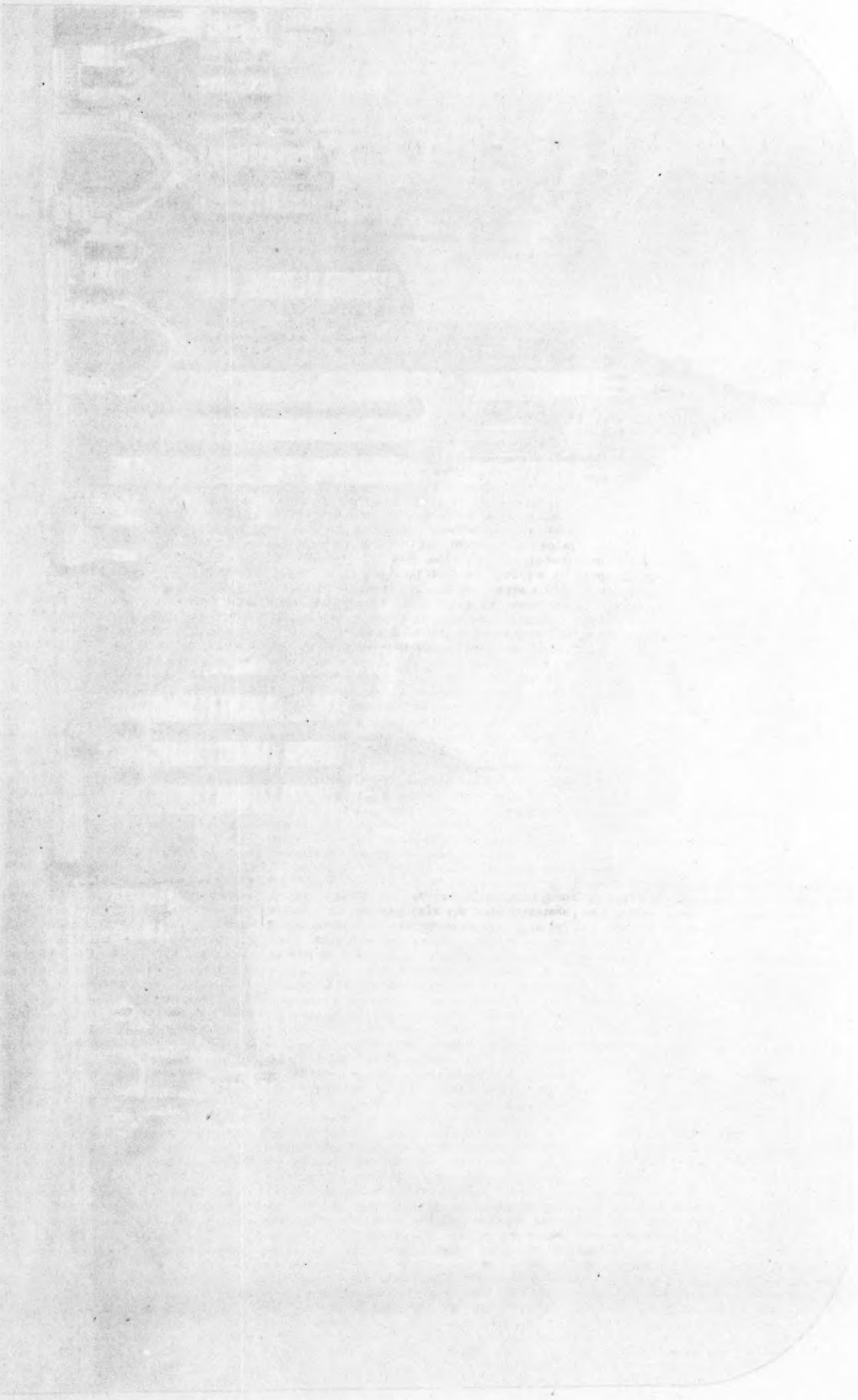




THE SESSIONS HOUSE OF THE ESTATES OF THE RHINE PROVINCE.—HERR JULIUS RASCHDORFF, ARCHITECT.



ST. GEORGE'S UNION INFIRMARY: FULHAM ROAD.—Mr. H. Saxon Snell, Architect.



THE FINSBURY STEAM JOINERY WORKS.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

ON Saturday afternoon last a large number of the members of the Architectural Association visited the well-known joinery works of Mr. W. H. Lascelles, Bunhill-row, E.C. The premises are very extensive, containing about 90,000 ft. super. of floor space, or upwards of two acres. Besides the house in Bunhill-row (the ground-floor of which is monopolised by the front entrance gateway to the works, with the counting-house on first-floor and foreman's residence above), the premises consist of a large factory consisting of basement, ground-floor, and four floors above, in addition to a large flat roof used for putting together framework, greenhouses, conservatories, huts, and large work of all kinds. The factory is a parallelogram in plan, and is lighted from the top by means of a long skylight running nearly the whole length of the building. Beneath this skylight is a continuous well-hole through each floor to the ground level, the various floors being supported on the sides next the well-hole by tiers of iron columns. The floors thus form what may be likened to broad flat galleries running entirely round the building. There are no windows in the side walls, the only means of lighting being the skylight and well-hole, and the windows at each end of the building. The basement is principally devoted to the storage of deal, wainscot, and mahogany, but also contains the boiler-house, which, with the engine-room on the ground-floor, consists of a fireproof structure. Two Cornish boilers, of 50-horse power nominal, supply steam to two 25-horse horizontal engines. The engines and boilers are so arranged that if one engine or one boiler is under repair, the other engine and boiler will do the work. The fire-boxes of the boilers are specially made of large area in order to burn up the wood refuse, consisting of shavings, chips, &c. This refuse is mixed with the coal in the stokehole, as much as three cartloads of this fuel being thrown in at one time. Arrangements are made by means of which the shavings and cuttings from the machines on the ground floor fall through to the basement, and are thence removed in barrows to the stokehole. In addition to this, there is a shaft communicating from the stokehole with each floor of the building, and down this shaft all the refuse from the upper floors is thrown. By utilising the refuse in this way a great saving is effected, for not only is less coal required, but the trouble and expense of carting away a large quantity of refuse is saved. The main shafting for driving the machinery runs in a kind of trough on the basement floor, and bands are carried up through the ground floor to actuate the machinery. By this means far less vibration is caused than would be the case were the shafting suspended from the underside of floors in the usual manner. The ground floor is partially devoted to the purposes of a deal store. On this floor are also various machines for sawing, shaping, and moulding wood, besides machines for sharpening and setting saws, &c. At one end of this floor is the engineer's shop, containing a large lathe and other appliances, enabling all the machinery in the building to be repaired and renewed in parts from time to time. There are also large "cleaning-up" benches on this floor. But the most notable and interesting feature of the ground floor is the drying-room or desiccating-chamber, just constructed upon the principle invented by Mr. Woods, of Massachusetts. This is the first drying-room of the kind which has been put up in England, and, so far as he has yet had experience of it, Mr. Lascelles says he has every reason to be satisfied with the results attained. The chamber is constructed to hold 5,000 standards of deal, but may be made larger or smaller. In this case it has on one side and at one end the ordinary party and external walls of the building, there being a window in the end wall. This window is, of course, kept closed. On the remaining end and side the chamber is enclosed by double wooden partitions, made as airtight as possible. Doors open through these partitions, to enable the timber to be removed in and out. When the chamber is charged with timber, and these doors closed, the chamber is practically airtight. Heat is applied by the utilisation of the waste steam from the engines, which is contained in an iron pipe, 5 in. or 6 in. in diameter, extending in the form of a serpentine gridiron over nearly the whole of the floor-area of the chamber. Above this the timber is placed, and the doors being shut the temperature is allowed to rise to from 130° to 150°, never exceeding the latter. The heat thus applied drives the moisture out of the wood; but how is this moisture got rid of? Mr. Lascelles said that in all desiccating chambers with which he was acquainted, the vapour was carried off by means of a shaft in one corner; but this shaft let in the cold air and retarded the process of drying. In the drying-chamber under notice, the vapour or moisture from the wood is got rid of in the following ingenious manner:—A water-pipe of about 2 in. in diameter, supplying cold water to the boilers, and always fully charged, enters the chamber at one end, and passes out at the other end, but between its points of entrance and exit it is greatly amplified by being connected with what may be called three large gridirons of iron piping, of about the same diameter as that of the supply-pipe. These gridirons are set up one at each end and one on one side of the chamber, with the bars vertical and a few inches from the walls. The cold water on its way to the boilers through the supply-pipe has to pass through the whole of this system of piping, consequently the "gridirons" are always fully charged. Each gridiron consists of about fifteen vertical tubes, besides horizontal ones at top and bottom. These pipes furnish a large area of constantly cold surface, and the vapour rising from the wood condenses on them and trickles down into a trough or gutter, whence it is drained away and reserved for the extraction of some peculiar acids which it contains. The timber remains in the chamber for about six weeks. Mr. Lascelles says the great advantage of the principle is that the wood dries from the centre outwards, the surface being the last to dry. It is not necessary that the temperature should be maintained uniformly the whole of the time the chamber is charged; and where the temperature varies in intensity, as in the case of works where the boiler-fires are extinguished at night and on Sundays, the only effect would be that any vapour that might be in the chamber when the temperature got low would fall down on to the wood, to be again dissipated when the temperature was increased. The principle here adopted is also used for drying clothes, and in preserving fruit for export. This portion of Mr. Lascelles's works excited much interest amongst the visitors. Mr. Lascelles's works contain another timber-drying chamber of the ordinary construction over the boilers. Commencing on the ground-floor, and ascending to the roof, there is, in the centre of the elongated well-hole, a lift worked by steam, and conveying timber to the workmen on the various floors. Around this lift there is arranged a central staircase. The first, second, third, and fourth floors are provided with benches to the number of forty or fifty on each floor, arranged end-on to each side of the well-hole, leaving a wide gangway nearest the wall on each side. The work done on the first floor comprises office furniture, desks, bank and shop fittings, window sashes and frames, doors, &c., most of this work being finished from the machines. On the second floor, staircases, railway work, brewers' work, &c., is to be found in progress. The third floor is devoted to "horticultural" work of all kinds, which is cleaned up from machines and fitted together; while the fourth floor is principally used for putting together and finishing off hard wood work of all kinds, and painting and glazing sashes and lights. About 200 men are employed on the works. Mr. Lascelles pointed out that all the glue used on the premises is Coignet's Medal Glue. This is a French product, and is made from fish. A great objection to English glue is that although it is supposed to be made entirely from clippings of English hides, clippings of hides from the River Plate and elsewhere are used. The foreign hides being salted for the journey, the salt contained in clippings from them remains in the glue, rendering it liable to be affected by changes of temperature. Moreover, with the French medal glue there is no offensive smell whatever. It is dearer than English glue, but it is much stronger, and therefore worth the extra cost. Among the specialities which attracted the notice of the visitors were Mr. Lascelles's patent dowelled flooring, and his "waved match-lining"; the latter is used on the walls and ceiling of Mr. Lascelles's counting-house, and produces a good effect, the cost being about 50s. per square. Mr. Lascelles also pointed out a simple contrivance for cutting bricks: this is simply an ordinary band-saw, with the exception that the "saw" consists of a piece of common hoop-iron bond. All the bricks used at Lowther Lodge, Kensington, and the new red brick house at Queen's-gate (both of which were built by Mr. Lascelles) were cut by this machine. The visitors also inspected a new pitch-pine staircase, which has been made by Mr. Lascelles from the designs of Mr. Waterhouse for a house at Sheffield-terrace, Kensington. Mr. Lascelles does a large trade in sashes for horticultural purposes, and he keeps in stock greenhouse lights, 6 ft. by 4 ft. and 3 ft. by 4 ft., ready glazed and primed, so that a greenhouse of any size can be quickly and cheaply erected. By the aid of machinery, he is enabled to sell these lights complete at 8d. per foot. His patent curved structures for horticultural purposes are well known, and his garden lights and boxes are both cheap and good. Mr. Lascelles makes school furniture and fittings to a large extent, having already supplied the London School Board with 18,000 dual desks and seats in pitch-pine. He has several specialities in the way of concrete construction, and for the development of this branch of his business he has just taken wateraide premises at Stratford, covering an area of 6½ acres. Here he will be able to make 1,000 concrete floor slabs per day. These premises will also enable him to supply his patent concrete slab cottages with greater facility, and he has determined, contrary to previous intimation, to undertake the building of these cottages where desired. This concrete is made entirely of breeze or burnt ballast and Portland cement. Among other items of interest, and for which we have not space, Mr. Lascelles described the very simple means of bookkeeping which is adopted on the premises. Each workman has a book in which his work is entered from week to week. From these books of the men the work is posted into other books kept in the counting-house, the wood used for each piece of work being specified. By the system adopted it can at once be ascertained what each particular piece of work has cost, and account is taken of each kind of wood used, in a manner enabling it to be easily ascertained what the waste amounts to,—a very important item in a large joiners' shop. The work is all piecework, there being a definite tariff price for each job. His is, Mr. Lascelles believes, the oldest piecework house in the trade. It has been carried on for nearly forty years, and no strike or any other difficulty has occurred. This says a great deal for both master and men. Mr. Lascelles says he has never been out of a joiners' shop for more than a month at a time for thirty years, and all he knows of the doings of trade unionists is what he sees in the papers. He believes that far less injury is done to the building trade by unionists than by the discreditable way in which contracts are sometimes let. Men not worth a sixpence are asked to compete, against established and reputable firms, for jobs involving an outlay of 10,000*l*. This is a growing evil, and will only be met, in Mr. Lascelles's opinion, by all respectable firms resolving to do what he has determined upon, viz., never to compete for a job unless he knows against whom he is competing.

ECCLESIASTICAL DECORATION, WITH SPECIAL REFERENCE TO THE CHURCH OF ST. FRANCIS, ASSISI.*

MY purpose in bringing forward this subject is to endeavour, as briefly as possible, to exhibit the close relationship which exists between the sister arts of sculpture, architecture, and decorative art. I shall divide my observations into three sections: namely, the origin and development of art; its application in the Classic and Middle Ages; and, lastly, its place and purpose in modern decoration.

In the first place, with reference to the origin of art, we have the undoubted fact before us, that from very remote antiquity, sculpture, architecture, and painting have gone hand in hand in serving to embellish those places set apart by man for the exercise of his religious duties, under every system of creed. That this arises from a spontaneous desire to honour to the utmost an acknowledged, though unseen, divinity, is clearly avowed. And in attempting to carry out his ideas, we can easily perceive how the influence of surrounding circumstances affects the results of his labour and forms a controlling element in the realisation of his thought.

As it is impossible to determine, with any

* By Mr. Thomas Bonnar. Read at the meeting of the Edinburgh Architectural Association on the 14th inst.

degree of precision, the period at which the art of painting was first employed as a principle of decoration, we must remain satisfied with the fact that those wonderful people, the Egyptians, were not ignorant of its use and power, and that it was applied by them as an agent in the elaboration of their marvellous temples and tombs. From the majority of the fragmentary remains of those sacred edifices which were adorned with mural decoration, we obtain much valuable insight and information respecting the manners and customs of a race, and of an age, which but for the light derived from this source would have long since been lost in the gloom of successive centuries. And not only do we get glimpses of their various modes of life, but from their hieroglyphic writings we are made acquainted with many of their forms of thought, especially in connexion with religious doctrines; and these seem to have been the basis on which are founded much of the theories and rituals of our own day.

The works of this people convey an impression of great vigour of execution, notwithstanding the restrictions imposed on all matters relating to art and all other methods thought capable of transmitting the slightest gleam of information, or idea of liberty, except such as were sanctioned by the priesthood, who looked with a jealous eye on anything which they might suspect of having a tendency to weaken their power. These ministers, through their system of mystical ritual, apparently governed and restrained, within certain prescribed limits, the range of thought enjoyed by the nation. And not only so, but from this subtle influence, with which the life of the nation became imperceptibly impregnated, arose that uniformity of mind and action, by which it was so strikingly characterised, and which became so firmly established that it appeared to be even less capable of change than the adamantine marbles out of which their statues were formed. Had this people lived in a state of even comparative freedom, with the genius and culture with which they were so eminently endowed, it is difficult to conjecture to what a height of excellence they would have attained in everything which constitutes the true greatness of a country; but, alas! their fetters, although unseen, were too securely bound. The very silent power and grandeur exhibited by their statues seem to suggest, by their near approach to completeness, the thought, "But lift the veil with which restriction has clothed us, and you will then perceive the perfection of ideal human form!"

The colouring used by the Egyptians in their paintings was confined to what are technically called primary colours; namely, reds, blues, and yellows,—the two latter when in combination forming their green tint. The groundwork was usually composed either of white or yellow; the outline showing extreme hardness, owing to the circumstance of red or black being employed for this purpose. The work of forming the outlines of figures or subjects was first performed by the priest, and afterwards traced by the sculptor, thus accounting for the sharpness of the lines.

Having by the favour and divine power of the goddess Isis fixed the limits of the design, with the aid of the chisel, the artist proceeded to fill in the various tints in their appointed places.

I have now to call your attention to the remarkable state of preservation which those pictures and hieroglyphics maintain at the present day. This is all the more extraordinary when we consider that it is the earlier, and not the later, specimens which are undoubtedly in the finest state of preservation, and likewise exhibit the greatest degree of merit. That this is a circumstance wonderful in itself and worthy of our earnest reflection, is all the more evident when, as may be broadly stated, we are aware of the fact that they were produced at least 4,000 years ago. I may here observe that it is difficult to accept, as the only explanation for their perfect condition and freshness of colouring, the statement that this must be solely attributed to the dryness of the Egyptian climate; for I am impressed with the belief that those by whom these works were produced were in possession of a method of preparing and applying their colours which is for the present unknown to us. I have been assisted to arrive at this conclusion from the circumstance that in the British Museum, situated in the centre of London—whose climate is presumed to be fatal to all works of art exposed to its influences—the specimens of Egyptian workmanship exhibited there are evidently as fresh and uninjured by climatic agencies as they were when first deposited there many years ago. In connexion with this matter it is desirable to bear in remembrance that it is to this same atmosphere that we impute the serious injuries sustained by those works in fresco which have of late years been employed for the mural decoration of the Houses of Parliament. A number of these pictures are almost entirely obliterated, while many more are in a very bad condition; and to this unfortunate result, may in great measure be ascribed the death-blow which fresco has received as a system for the extension of higher art decoration in this country. And it is evident that this will remain an insurmountable obstacle until moist colours are obtained which shall have the property of withstanding the effects of our variable climate. I am inclined to think that this drawback lies in no small degree with the manufacturer. I would suggest, as a means of assisting to overcome this difficulty, that the art student should attentively and carefully study the chemical properties of the materials which he has now to work, and by so doing acquire an intimate knowledge of their composition. If fully instructed and informed in this important branch of his education, experience would lead him only to use those pigments which an intimate perception of their qualities under varying conditions would justify him in selecting and adopting, in circumstances requiring the retention of their original brilliancy and depth. This part of the art student's training has hitherto been almost entirely ignored in the public schools of this country; whereas, in those of the best periods of Italian and German art it was one of the essential studies of his scholastic career; and it is almost needless to mention in relation to this part of my subject such names as Michelangelo, Raffaelle, and Da Vinci, who, while masters of chemistry, were at the same time the greatest masters of their art. The works executed in fresco by the two first-named evince, by the splendid state of preservation in which they are seen at the present day, sufficient proof in confirmation of this statement.

I will now proceed to take up the second section of my subject, namely, the application of art in the Classic and Middle Ages. It may be accepted as conclusive that the Greeks, in their works of sculpture and architecture, display the source whence they derived their early impressions of art; and it is equally clear that this was derived from the Egyptian.

We have a striking illustration of the correctness of this theory if we take as an example that figure of ornamentation familiarly known by the name of honeysuckle, from its resemblance to our native woodbine, although in reality it is the "lotus" of Egypt. It also figures prominently in the ornamental art of the contemporary Etruscans, where in some instances the natural form of the leaves is actually delineated. But in the hands of the Greek artist it assumed, in varied and conventional forms, that beautiful perfection of architectural adaptation which distinguishes the "Periclean period."

We have only to recall to mind the character and genius of the Greeks to find this solution of their manifestly extraordinary progress in the development of art. Their highest ideal was man exalted and surrounded by a mystical existence, based on the glowing traditions in which the poets deified their heroes of antiquity, investing them with Divine attributes, and creating in them the gods of Olympus. Operated upon by this influence, their sympathetic genius called forth every latent power to aid in producing the loftiest and noblest embodiments of art and beauty, and at the same time enabled them to clothe their works with such a subtle charm, that even in this matter-of-fact age—ignoring the influences which inspired these masters—and actuated merely by the force of study and appreciation, we are transfixed as by a spell when in the presence of their sculptors, and more especially when standing under the shadow of their sublime architecture, which is recognised as the undisputed evidence of all that is true and beautiful.

With such perfection in the arts of sculpture and architecture, it is not assuming too much to suppose that the art of painting had also reached a high relative position; and, as for proficiency, the names of those masters which have descended to us may well be entitled to rank with the greatest of the exponents of art which the sixteenth century produced.

The Greeks displayed great diversity in the ornamentation of their temples and places of worship, adapting to this purpose the most rare and valuable materials, such as the precious metals, the richest marbles, and beautiful mosaics; and although these were lavishly employed, yet they were treated with singular skill and success in adorning and beautifying these magnificent buildings. We are informed by Pliny that the pencil of the decorative artist was also frequently called into use to ornament in low relief, and light and shade, those large surfaces which otherwise would have appeared monotonous from their extent, but by this treatment they were rendered serviceable, and combined with the other decorations in lending grace and beauty to the whole. This statement of Pliny's may be justly accepted in proof of the prevalence of decorative art as an important feature in the embellishment of Grecian temples. But were it necessary to produce additional testimony, I think it would be sufficiently conclusive to refer to the state of art as revealed to our wondering eyes in the cities of Herculaneum and Pompeii, where in traversing the now silent, but once busy streets, and observing the dwellings and public places at one time the homes and resorts of a gay and prosperous people, we discover in the works that everywhere meet our gaze abundant evidence of the true spirit of Grecian art, in which originality, vigorous treatment, and power of execution are all undeniably apparent; thus conclusively proving that decorative art was, down to the dawning of the Christian era, an acknowledged, and not only so, but likewise an indispensable requirement of the every-day social and religious life of a community who derived their origin from the shores of Greece. But considerable allowance must be made when we take into consideration the centuries which had elapsed from the time when, as a united nation, they achieved the zenith of fame and power under Pericles. To this interval, with all its varying changes, must be ascribed much of the crudeness and want of aërial effects displayed in many of their works, and this circumstance should be accepted as accounting for their decadence in an art in which they once attained to great perfection.

The art of fresco painting is generally spoken of as a process familiar to and employed by the Greeks in their decorative works; but if we examine those examples known to us, we shall fail to find any satisfactory traces to show that they were acquainted with this method. I referred to this fact in the paper I had the pleasure of reading last year,—"Notes of a Tour in Italy," *—where I stated that, on inspecting the paintings in Pompeii, and also the higher productions of art in the Baths of Titus in Rome, I could not discern any vestiges of what is recognised as true fresco. There is little doubt but that the colouring, in many instances, had been applied while the plaster was in a moist condition, and this was all the more obvious when small portions, which had fallen from the walls, were closely scrutinised, as the plaster appeared to have absorbed the colours to an extent which could only have arisen from this cause; but in no instance do figures or ornamental detail present the appearance of having been executed in this manner; they seem rather to have been done in tempera, a medium which we are aware the ancients were conversant with, and subsequently coated over with wax. I had, fortunately, an excellent opportunity of witnessing the truth of this theory demonstrated, being present while some workmen were engaged in clearing the *débris* out of a house in Pompeii, and in the course of their labours part of a beautifully-painted wall was brought into view, in which the subject parts still retained a gloss, but the surroundings were quite lustreless. It is only reasonable to assume that, had the Greeks understood the process of painting in fresco, they would most assuredly have adopted it in preference to all other media for the embellishment of their magnificent temples; for they were a race eager and anxious to perpetuate the memories of their glorious achievements and noble works, and the enduring capabilities of fresco would not have been overlooked by a people who rendered their knowledge subservient to the cause of art, whether in sculpture, painting, or architecture, and who made it a law to carefully select for these purposes only those substances to which were attributed the quality of time-defying endurance. Fresco, as possessing this essential qualification to recommend its

* *Builder*, vol. xxxiv., pp. 382, 415.

adoption, would certainly have been used as the means of depicting, with the imaginative power and genius by which their works are so strikingly characterised, the stirring scenes and moving incidents of their time, from whence we might have learned much that has been irretrievably lost concerning one of the most extraordinary nations the world has ever seen.

In confirmation of the fact that either pictures painted on canvas or tapestries were employed to cover large surfaces, we are informed that in the Parthenon are still visible, in the parts where masonry is exposed, hook-holes, such as would be necessary for the purpose of fixing up the stretchers or wooden frames on which the canvasses were extended; and this, when stated in connexion with the well-known fact that Polygnotus decorated the Theseum, renders it highly probable that tempera was the medium used; for in the midst of the many and important discoveries of invaluable treasures which are being brought to light at the present time through the energy and perseverance of Dr. Schliemann (whose undaunted spirit of research deserves being richly rewarded), no specimen, however insignificant, has yet appeared to give credence to the fact of fresco having been practised. Taking these circumstances together, and looking at them in relation to this matter, it seems impossible to give an earlier date to the use of fresco than the beginning of the Christian era.

Although, from the absence of any records referring to it, there is very little data on which to found an opinion as to the precise period of the discovery and employment of fresco-painting, we can still fall back on those examples which, by exhibiting the most primitive treatment, enable us by analogy to arrive at the conclusion that it was first practised in the second century of the Christian era. There are several specimens dating from this period, taken from the Catacombs, and now preserved in the Palace of the Lateran, which give authority to this supposition.

Not only was Imperial Rome made resplendent with the treasures which fell into the hands of her victorious armies as the spoils of conquest; but the vanquished cities of Greece were also deprived of the services of those artists who had done so much to make them famous. These unfortunate men, prisoners, and in a strange country, and fallen as they had from an independent state, quickly became the slaves of the caprice of their conquerors. From the presence of so much talent in Rome, great results might have been expected to flow, but in consequence of the degraded position of these artists, their work very soon began to reflect the condition in which they existed. Although it is acknowledged that they had descended from the highest period of their art, still their works while they continued in a state of freedom manifested a superiority to anything which the native Romans could produce, and was, therefore, patronised by the munificence and grandeur of the Cæsars. Sympathising with Pagan thought, their works exhibited considerable power of expression, as well as intellectual beauty, which must at all times command admiration. Nevertheless, the elevating influences by which they were at first inspired gradually became feebler, and slowly but surely deadened, until their works betrayed that they were the labour of men engaged on an irksome task, void of interest, and only accomplished to serve the pleasure, and pander to the vitiated tastes of their Roman conquerors.

Under such melancholy aspects, with art in this servile position, and its social bases paralysed if not destroyed, no wonder that there should have been a rapid decadence. And to increase the impetus of its downward career, a spirit of incredulity and unbelief in the principles of the Pagan system began to arise and unsettle their minds. This acted as a fatal blow, for it was from the ancient mythology that the Greek artist, while striving to attain his highest ideal of the God-like and beautiful, had imbibed his grandest inspirations. Indeed, as already stated, it was the source from which his art had emanated, and had continued to be fostered; but now it was doomed to share a common fate.

The period had arrived when the Imperial City of the Cæsars,—in the height of its magnificence and power bearing the proud title of Mistress of the World,—was destined to experience with unsparing severity the heavy hand of retribution. The lot which they had so often dealt to others was now visited on themselves by the inroad of the barbarian hordes; who, in the exercise of their largely-developed faculty of destructiveness, ruthlessly demolished the beautiful and precious treasures of art which had contributed so much to extend the glory and renown of the Imperial city. This event was speedily followed by the general acceptance of the Christian faith, through the conversion of the Emperor Constantine, who established the seat of his empire in the city of Byzantium. These circumstances contributed in a great measure to extinguish that art sympathy which had at no time any deeper hold on the minds of the Romans than its reputation of being fashionable, and its utility as a medium for the display of wealth, grandeur, and dominion.

At the Byzantine Court, art in its Christian phase not only regained a state of freedom, but was also largely patronised and kindly fostered. The presence of the wealthy and great at this court doubtless tended to attract to its precincts the Greek artist and skilled artisan, for here they would find their skill and workmanship both appreciated and rewarded. It was in every sense a congenial field for the exercise of their ingenuity and labour, surrounded as they were by all that had been spared from destruction of the magnificence and splendour of plundered Rome, brought thither by Constantine. For we are informed that even in the lifetime of its founder the capital of the East was celebrated for its gorgeous and splendid accessories, and rendered it worthy of being the seat of the illustrious originator of the new empire.

While considering the many advantages accruing from the fact of having ready and convenient access to appropriate studies of the most successful results of the loftiest ideals of the Classic period, and the certainty of the existence of a steady demand for such works, it remains a matter for regret that there is an evident absence of desire on the part of the artists to seek inspiration from the examples of true genius with which they ought to have been familiar. Instead of that, their works suggest that they were possessed by a feeling of perfect indifference, amounting to spiritless apathy. This may perhaps be accounted for as arising from local influences, and the usages of semi-Oriental life, enfeebling the already weak vitality which governed their imagination and hands, under which circumstances art became but a system of reproductions, full of glaring defects and mannerisms; and pure Greek art, becoming adulterated with the debased ideas of the Oriental type, ceased to exhibit, save in apparently accidental effects, the spirit from which it received its origin. And the artist, degenerating from his proper position to that of a luxurious workman, could no longer understand or interpret the graces of Classic art, which became an exotic in the hands of those whose ancestors had been the founders and maturers of the perfection of idealistic beauty.

The evidences of the persistent struggles undergone by Christian art, in its attempts to free itself of the trammels with which its association with the peculiarities of the Byzantine period had bound it, are best illustrated in the examples of mosaicists' art existing in the churches of Rome and Venice, a specimen of which phase of Byzantine work is shown in the decoration of the triumphal arch of St. Maria Maggiore, in Rome. It is dated 432, and is an unmistakable proof of artistic power and talent. It strikes the observer with a feeling best described as one of solemn grandeur. But, again, nothing is more suggestive of the enervated, I might almost say stagnant, state of art, when we view the highest result from the last-mentioned example of the descendants of this school, as displayed in the mosaics of the chancel in the famous church of St. Ambrose, in Milan, dated four centuries later, namely 836. We are conscious of the fact that there is an utter absence of progressive movement distinctly visible, and in its place a decided falling off, both in drawing and expression.

It is not until 1112, the date of the mosaics in St. Clement's, Rome, that we witness the initiatory advancement towards the naturalistic. It possesses the charm of manifest freedom and release from the traditionary school, and succeeds in combining a prismatic harmony and chasteness of colouring with rich and varied ornamentation.

It is a matter of some difficulty to assign a cause for such tardy progress, even supposing every allowance is granted for the hindrance imposed by the contentions of sectarianism, the blighting influence of barbarian invasion, or the destructive effects of the furious iconoclasts; and this difficulty in no way diminishes when we pause to contrast it with the steady advance and development of art which sprang up immediately that the Italians acquired independence of action and began to exercise freedom of thought on being emancipated from the sway of Byzantine authority in the twelfth century; so that with this period we have indications of the dawn of a brighter day for art. The darkness in which it had been enshrouded during the long reign of Pagan supremacy was about to be dispelled.

This was eminently a religious age, and with an all-powerful church the princely Popes became at once the promoters and munificent patrons of art, and Rome again resumed her position as the centre of its life and activity. The choicest forms of the antique were in great demand, and were cherished as authoritative studies, and the name of artist was once more a title of honour. But their efforts in pursuit of this excellence were carried out in the genuine spirit, which did not wish to remain satisfied with mere reproduction, but sought rather to blend with all that was beautiful in ancient art, the characteristics which expressed the changed circumstances and requirements of the time.*

SOME CIRCUMSTANCES WHICH INFLUENCED THE ARRANGEMENT OF MEDIÆVAL BUILDINGS.

At the close of Mr. Brewer's paper on this subject, read at the meeting of the Architectural Association, and printed in our last issue (p. 261),

The Chairman (Mr. Boyes) said Mr. Brewer's paper was particularly interesting, inasmuch as it enabled architects to see themselves as they were seen by a well-informed "outsider." A great deal had been heard of late as to the way in which the profession was regarded by learned barristers and others, but Mr. Brewer's criticisms were free from the errors made by other outsiders when they treated of professional matters. Mr. Brewer had undoubtedly touched upon some of what might be called the weak points of the profession. For instance, there were many architects who would not, even if they could, give up lucrative work on artistic considerations. He had very clearly demonstrated that the Mediæval builders made their buildings to suit their sites, instead of deforming the sites to suit the buildings. He had also described the mode in which the operation of reducing and "cutting down" a building in course of erection was effected by the Mediæval builders. On this point he (the chairman) did not think that the members would agree with Mr. Brewer in commending the Mediæval practice in this respect. A row of bases without columns superimposed would certainly not add to the æsthetic qualities of a building, however interesting they might be as showing what was the original intention of the architect. The process of "cutting down," in present-day practice, was generally productive of great improvement in architectural designs, as it necessitated the excision of redundant and often meretricious ornament. He (the Chairman) was afraid it was utterly Utopian to hope that clients would allow their architects to carry out buildings for them without their seeing the drawings, however satisfactory might be the issue in many cases. People liked to see what they were going to get for their money. Very often, no doubt, if clients could be persuaded to go out of the country while their buildings were being erected they would save the heavy costs which they now incurred for "extras." Mr. Brewer had very ably exposed the absurdity of saying that the hope of British architecture was in the British workman. Such a dictum was not worth wasting argument upon. It was what Mr. John T. Robinson would some years ago have characterised as an "exploded idea." At the same time, however, it would be matter of regret if architects neglected their opportunities of teaching the workmen employed on their buildings to distinguish between right and wrong in matters of taste and construction. There were many intelligent builders and honest workmen who would readily appreciate the architects' efforts in such a direction.

Mr. H. H. Statham said he had been very much interested in one particular point which Mr. Brewer had dwelt upon at the outset of his paper, because it was a subject upon which he (Mr.

* The remainder in our next.

Statham) had had the honour of addressing the Association three years ago.* He was very glad to find that a gentleman who had travelled so extensively as Mr. Brewer confirmed what he (Mr. Statham) had endeavoured to point out on the occasion referred to, viz., that the picturesqueness of many Mediæval buildings arose from the way in which they seemed to grow out of their sites, rendering it difficult to trace where nature ended and where the building began. He was, however, inclined to doubt whether that result was intentional in the conception of the design; it probably was due to the builders working without such complete drawings as were made in the present day, and to their adapting the building to the site as the work progressed. But the combination of architecture and landscape need not be confined to picturesque sites, as had been shown by Sir Charles Barry. As to the effect of the system of contracting for the erection of buildings, he (the speaker) knew of two cases in which houses were built in the manner desiderated by Mr. Brewer (by measure and value), and both had led to costly law-suits, owing chiefly to excess of expenditure, and the want of any previous understanding on that point. The public liked to know, within a little, what their building would cost. Mr. Brewer's remarks as to the money part of the question reminded him of a story told of Pugin, who was asked by an intending client to furnish designs for a chapel which was required to be very ornate, very large, and very cheap, because there were only 3,000*l.* to defray the cost. The client thought it would be better to dispense with a spire. Pugin's answer was,—"Say 30*s.* more and have a spire!"

Mr. Potter, in proposing a vote of thanks to Mr. Brewer for his paper, said he quite agreed with Mr. Brewer's views as to the advantages which would result both to architects and their clients by showing the latter as few drawings as possible. He was once concerned in the erection of a building for a client who was abroad the whole of the time the works were in progress. The consequence was that there was not a shilling to pay for "extras," and the client was much better satisfied than he would have been had he been on the spot to interfere with what was going forward. Clients were frequently great nuisances. They visited the works in progress when the architect was absent, and the builder or his foreman, only too ready to criticise the architect's proposals, often succeeded in biassing the minds of clients in favour of alterations or deviations from plan, the cost in the end being enormously increased by bills for "extras."

Mr. W. W. Robertson, in seconding the motion, said that while there was a great deal to be said in favour of architects submitting as few drawings as possible to their clients, there was much to be said against the aggravation of the evil referred to by architects submitting "alternative" designs. Surely the architect who was at the pains to prepare alternative designs had some opinion of his own as to which was the best? If so, he should only submit the one which he considered to be the best. When the client was left to choose from "alternative" designs, he invariably chose the worst.

The chairman having put the motion, it was carried with much applause.

Mr. Brewer, in the course of some remarks in reply, said that in regard to the way in which the Mediæval builders suited their buildings to their sites, he did not mean to suggest that they did not make use of certain "accidents" which happened in the course of the works. Nor did he mean it to be understood that they deliberately and in a "cold-blooded" way sat down to design a picturesque building. It should be recollected that "accidents" such as he referred to were of two kinds,—those which could be obviated and those which should be made use of. The Mediæval architects were exceedingly clever in seizing hold of any accident that happened and turning it to advantage. As to the method of building by measure and value being prolific of law-suits, he should have thought that would not be the case if the accounts were sent in pretty frequently. As to not showing drawings to clients, one of the most beautiful modern churches in this country had been erected without the client having seen any drawing save the ground-plan, and he was so satisfied with the result that he declared that if he had to build again he would pursue the same course.

* "Architecture and Landscape," *Builder*, vol. xxxii' 1874), pp. 986, 1006.

SHAKSPEARE RECITALS.

ON Thursday in last week, Mr. & Mrs. C. J. Freake gave a number of their friends an opportunity, at Cromwell House, to hear Mr. Samuel Brandram recite Shakspeare. This gentleman, well known in society as an excellent amateur actor, has for some short time past adopted elocution as a profession, and displays powers of high order. On the occasion in question the selections included parts of "Henry V." and of "The Winter's Tale"; the chivalric bearing of the young king, the bullyings of *Pistol*, the humour and nationality of *Fluellen*, the whinings of the rogue *Autolycus*, being all presented with remarkable taste and skill. Mr. Brandram's power of memory is something prodigious. We have heard him repeat the whole of a play, from beginning to end, without referring to a single note, singing, too, most pleasantly, the snatches of song that intervened. Mr. Brandram stands quite alone, and will, we have no doubt, be warmly welcomed by a large public.

ON SHAKSPEARE'S CHAIR.

(Recently Sold at Sotheby's.)

ONLY a wooden chair! And yet no royal throne
Has o'er held sceptred monarchs whose imperial sway
Possess'd such mighty power o'er hearts and minds of men:
They mostly but the puppets of a pageant were
That the effacing hand of time has swept away;
But this man's wondrous power beyond the tomb lives on
And grows for evermore.

And in that chair
He traced those tender types of varied womanhood
That live graved on our hearts and in our memory:
Each chord, each diapason of the human heart
In turn was struck and answer'd by this master hand:
The statesman's eloquence, the jester's merry quip,
The deeper notes of sad despair and life-long agony;
And, rising high o'er all, love's pure and tender tones.
Then come the warrior's march—the warlike clash of arms;
The conqueror's shout! the ringing burst of victory;
Till, wonder-struck, one feels Time naught, as for all age
Our Shakspeare lives, and dimly through the mist of years
Fancy can see him seated there, serenely calm,
Swift penning the immortal verse that held,—that holds
A spell-bound world entranced,—his listening captive still.

SPECULATIONS IN LAND FOR BUILDING PURPOSES IN SCOTLAND.

IT is a moot question if even English speculators in building land, have met with the extraordinary success that has waited upon the "Scots."

Taking the city of Glasgow first, we find, in 1868, one property was bought for 22,000*l.*, and 11,000*l.* for improvements tottled the cost up to 33,000*l.* In 1874 it was sold to the Caledonian Railway Company for 85,000*l.*, and competent valuers considered it should have been sold for 100,000*l.* Another property, contiguous, bought for 14,500*l.*, sold three years afterwards for 35,000*l.* Another bought for 10,500*l.*, sold in two years for 15,000*l.* Another, costing 10,000*l.* in 1874, was afterwards sold at the prices of 13,000*l.* and 15,000*l.* respectively; a fourth offer of 16,000*l.* was refused, and recently it fetched about 60*l.* per square yard. One building, bought for 7,750*l.* was resold the same week for 10,000*l.* A house sold in 1840, for 800*l.*, was sold recently for 13,500*l.* Three houses that, in 1874, were offered for 14,000*l.*, sold at auction for 19,600*l.*, directly after the person refused to give the first sum. In 1869, a property fetched 5,550*l.*, was sold, in 1874, for 13,100*l.*; another property, offered at 15,000*l.*, and refused, fetched, eighteen months afterwards, 24,250*l.* A property in one street fetched, in 1867, 4,500*l.*, further costing in repairs up to 10,000*l.*, nine years afterwards sold for 20,000*l.* Another property in the same street was purchased at 2,100*l.*, and with alterations totting up to 4,500*l.*, sold in 1875 for 5,000*l.*, and the last purchaser has since refused 12,000*l.* for it. In 1872 a plot of ground was obtained for 4,500*l.*, and a corresponding piece on the opposite side of the street, occupied by buildings of little value, has since been sold for over 20,000*l.* In another street a property sold for 55,000*l.*; within three months after it fetched 66,000*l.*, and in the same street 105*l.* a square yard has been offered and refused.

In the outskirts of the city of Glasgow, overbuilding in some cases is, however, telling "the London tale," and speculators, when repairs come to be necessary, will be enormous losers. It may naturally be expected that rents have jumped up with the rise in the cost of land, the Scotch house-letting system being different from London custom, the landlords chiefly letting their houses out in apartments themselves, and not letting a house to one person alone. The following figures show the highest rents paid fifteen years ago, and the like apartments paying now. Houses of two apartments in 1862, letting at 9*l.* 15*s.* per annum, are now realising, in 1877, 13*l.* 10*s.*; three apartments, from 15*l.*, now 19*l.* 15*s.* up to 23*l.*; four apartments, 22*l.*, now 35*l.*; five apartments, 28*l.*, now 45*l.*;—the ratio of increase being maintained as we ascend, and house-rents are now in Glasgow higher than in any part of Scotland, though in Edinburgh rents are rising rapidly.

As to counting-houses and mercantile establishments, the rents fifteen years ago were at the rate of 1*s.* to 2*s.* 6*d.* per square foot of floor space, save in exceptional cases, which ought not to be taken into account; now the lowest is 1*s.* 6*d.*, rising to 4*s.* 6*d.* per foot. Striking instances of land value have been cited, one acre and a half of ground selling at 700*l.* an acre now realising a profit of 7,500*l.* The same fortunate speculator bought thirty-three acres of ground outside the city, at 700*l.* per acre, or 2*s.* 11*d.* per yard, and re-sold it at 1,200*l.* per acre, or 5*s.* a yard, yielding a profit of about 17,000*l.* Since then, the second purchaser has been offered a profit of 40,000*l.*, but asks 80,000*l.* bonus, and is likely to get it. Forty-five acres that were offered eight years ago for 250*l.* an acre, have since been sold for 45,000*l.*, and last month 1,200*l.* an acre was asked for them. The Corporation of Glasgow have twenty acres, for which they paid 2*s.* a yard, and offers have been made of 19*s.* 6*d.* a yard for 10,000 yards, and 20*s.* a yard for the other 10,000 yards, and refused.

Ten years ago two speculators bought a big bit of ground at the rate of 350*l.* an acre. This afterwards fetched, in lump, 900*l.* an acre, and is being retailed at the rate of 2,830*l.* an acre. Another estate of seventy acres, bought for 17,000*l.*, is now being rapidly sold, slating up to 400,000*l.*, or for every pound of the first purchase-money the holder will have realised a clear gain of 22*l.* 10*s.* 7*d.*, or an increase of the original amount of 2,253 per cent., and the estate is likely to realise a rental of 17,000*l.* per acre, being the whole first cost.

In the end tenants and occupiers have to bear this enormous increase in the value of land. What with the heavy ground-rents on leasehold property, increase of rates, taxes, workmen's wages, and rise in the price of building materials, in a few years' time rents will become unbearable in populous places.

THE RAILWAY PASSENGER DUTY.

SIR,—In your paper of the 3rd instant there was an article on the Railway Passenger Duty, which, though written with care and impartiality, appears to me to omit some important considerations, and also to contain some inaccuracies.

In considering whether the tax should be retained, you rely chiefly on the proportion of its amount to the value of railway property taken as a whole, but you do not consider how the burden is distributed among the different railways. Few will quarrel with your decision in favour of passenger traffic over goods traffic as a source of taxation, but when you levy any tax on gross receipts you are sure to commit injustice, because there is no fixed proportion between gross receipts and net profits.

Take the following as an instance:—

In 1874	Goods Traffic Receipts. £.	Passenger Receipts. £.	Passenger Duty. £.	Net Receipts. £.
Great Eastern	1,242,966	1,141,132	36,969	1,156,936
Great Northern	1,579,183	1,049,076	31,238	1,237,739

This appears pretty equal at first sight, but turn to page 6 in the Returns of the Board of Trade for 1874, which gives the rate of dividend paid, and you will find that, while the Great Northern pays to its ordinary shareholders a dividend varying from 6 to 7¼ per cent., the Great Eastern, though it pays every farthing due on guaranteed, preferential, and debenture stock, pays nothing at all to its ordinary shareholders, who thus hold nine millions of profitless capital. Turning to page 76, in hopes of discovering the reason of this, I find, with some surprise, that while the working expenditure of the Great Northern is 55 per cent. of the gross receipts, that of the Great Eastern is not more than 57. But, turning to page 56, I find that the mileage open on these two railways is:—

	Double or more.	Single.	Total.
Great Eastern	430 ...	422 ...	852
Great Northern ...	438 ...	148 ...	586

The Great Eastern appears to be punished for having done more than its competitor for the

public interest. So far as this is merely the result of over-zeal (of whatever kind), it cannot be helped; but it is not fair that the Government should come in and fine the shareholders by imposing an extra income-tax on those who have no income. At page 7 of the Returns for 1874, I find that the amount of capital in constructed lines on which no dividend was paid exceeded forty-eight millions. How much these railways paid for passenger duty is not stated, but I have made out a table of fifty-one railways, of whose capital 33,500,000*l.* were unproductive, yet these railways paid 93,073*l.* in rates, and 71,568*l.* in passenger duty. The rate of dividend allowed by law (7 and 8 Vic., cap. 85) on a railway is 10 per cent. This would give a dividend on this capital of 3,350,000*l.*, on which 71,568*l.* is a tax of 5d. in the pound. The income-tax is only 3d. in the pound, and leaves 237d. to the taxpayers. The passenger-duty, in the case of these unfortunate railways, leaves nothing behind. It is 5d. in the pound on the income which the shareholders are allowed to hope for, but not one farthing of which they receive. Taking some of your remarks *seriatim*:

1. I will not deny that the magnitude of the question may be overrated, but its smallness is a reason for settling it, because it diminishes the difficulty. A halfpenny extra in the income-tax would settle it for ever.

2. The total amount paid for passenger duty *is* stated in the Return, p. x., at 539,821*l.*, a sum differing very little from that you have calculated for it.

3. You say, "From this date, however, it must be remembered that the third-class traffic is, to a great extent, free"; and you afterwards calculated that "something like 100,000*l.* per annum is the outside that the companies could expect to save by the alteration of the existing law as far as it relates to third-class traffic."

This is an error, arising from the limitation of your date to the Board of Trade Returns for 1874. The decision of the Court of Exchequer, which upset so much of the exemption granted by the Board of Trade, took place on the 6th of July, 1874. Consequently, the year 1874 gives neither the old nor the new amount of the duty. If you take the Board of Trade Returns also for 1873 and 1875, you will find the following as the passenger duty for the years ending the 31st of December:—

1873.	1874.	1875.
£506,455.	£599,821.	£747,680.

The increase, therefore, is 241,225*l.*, about 48 per cent., and nearly all this on penny-a-mile fares. That such an increase should be suddenly inflicted on any class of persons by the blunder of the Treasury and the Board of Inland Revenue is, in itself, a strong argument against the tax. For it *was* a blunder to submit the case to a Court of Law. The Court could only decide what was the meaning of the words of the Act of 1844,—an Act passed in the infancy of railways. If the Treasury thought the tax too light, or rather if they thought the exemption was granted too easily, they should have come to some understanding with the railways, and asked Parliament for a new Act. It is this blunder, and the injustice it has entailed, that have caused the agitation against the duty to take a determined and practical shape.

But a comparison between the returns ending December twelvemonth and those ending last March show something more. The nineteenth report of the Board of Inland Revenue gives for the railway passenger duty ending March 31st:

1873.	1874.	1875.	1876.
507,079*l.*	514,715*l.*	629,727*l.*	736,369*l.*

It appears, therefore, that the duty has begun to decline. The injustice of the decision which the solicitor of Inland Revenue had invoked, is so palpable that he has reversed a part of it on his own authority. That decision consisted of two parts:—

1. No train is entitled to exemption that does not go from one end to the other of a trunk, branch, or junction line.

2. Such train must stop at every intermediate station.

The second part of the decision is enforced. Thus the morning train from Richmond, though it is full when it arrives at Camden, has to stop at every station between Camden and Broad-street, and a free fight takes place at these stations because only a very small number can get into the well-filled train which no one wishes to leave.

But Mr. Melvill evades the first part of the decision by what he calls the sectional system. He constitutes a number of intermediate stations into terminal stations, and all trains going from one of these to another, and stopping at every intermediate station to set down and take up passengers at 1d. a mile, get exemption on all fares which do not exceed that amount. A good railway manager is, therefore, now one who can not only arrange his trains so as to give the best accommodation to the public, but can manage to get leave to arrange them so as to pay the least amount of duty. In fact, he is a subordinate tax-gatherer, appointed by the taxpayer instead of by the Board of Inland Revenue. This system of making every manufacturer and every tradesman a supplementary tax-gatherer lasted for 150 years, but is now nearly out of date. Sir Robert Peel gave it its first blow when he abolished 750 Customs duties. It has been abolished as regards glass, bricks, soap, paper, and sugar, and as regards publications like your own. Surely it is time to allow the managers of railways to devote all their energies to their own arduous task, and not to make them sub-collectors of excise.

4. You say that "the railway companies have been invested by the Legislature of the United Kingdom with powers and privileges such as are altogether exceptional." Surely it is not an exceptional privilege that they are allowed to retain in perpetuity the land which they have bought, and the lines that they have made. If they are allowed to appoint their own police, this is a saving of expense to those rates to which nevertheless they contribute. They are under restrictions as to fares, such as are imposed on no other coach proprietors or carriers. If the ratepayer now contributes directly to the repair of the highways, he also enjoys the advantage of cheaper railway travelling which he would be very sorry to give up, and he no longer pays taxes on his horses or tolls on them when they go through the turnpikes. If a railway company tries unfair competition against a canal it is amenable to the law, as the railway commissioners have just shown in the case of the Kennet and Avon Canal Traders, and the Great Western. So far from the course of recent legislation having run in favour of railways as against carriages drawn by horse-power, the average dividend on railway capital is only 4¼ per cent., while the London General Omnibus Company has recently announced a dividend of 12 per cent.

5. You say, comparing France with England, "The difference in imposts per mile alone, if taken at twenty-five years' purchase, is equal to a subvention of 12,500*l.* per mile in favour of the English lines." But the English lines have received no subvention from the State. The statement, therefore, only means that the French railway proprietors have paid a fine of 12,502*l.* for every mile of railway they have made, besides paying a fine equal to that which is levied on English railways.

Two things have to be shown in order to justify the railway-passenger duty. First, that the railways enjoy a monopoly which enables them to obtain more than the current rate of the profits of capital; and secondly, that it is wise and just to make the managers of a difficult and responsible business sub-collectors of taxes for the State from which they receive no salary.

The first and second class passengers, for the most part, pay income-tax. A halfpenny in the pound extra would relieve them of what they pay in duty, and give them an increase of accommodation from the railways.

The railway shareholders, even if they are not so rich as to be able to bear the extra taxation to which they are now subjected, would be glad to purchase exemption from it at so cheap a rate as ½d. in the pound, levied only on their actual income. I believe that there is no tax which could be abolished with so little change in the incidence of taxation. If every father of a family living in a suburban district would calculate what he and his children pay in passenger-duty, and how much an extra ½d. in his income-tax would cost him, I think he would scarcely object to pay the ½d.

In the number of the *Builder* in which your article appears, I find in the lecture of Professor Barry the following paragraph:—

"Progress in brick architecture in modern times was long hindered by an excise duty levied on bricks, which practically controlled their manufacture, and hindered improvement. The evil of such things lives after them; and though the duty has been abolished for many years, its depressing influences have remained until very recent times. Now there are evidences of a greater freedom in the use of bricks of various forms and designs."

The Excise has always blighted every trade, art, and profession that it has touched, and its evil influence in the shape of the railway passenger-duty cannot be measured by any calculation of the ratio between the amount of the duty and that of the capital invested in railways.

C. D. COLLET.

HYDE PARK—KENSINGTON BARRACKS.

THE noblest site in London's finest park is now vacant and unappropriated, and all the old buildings cleared away, save the officers' quarters, which are under process of demolition. Until opened out, the beauty and value of the position could not be appreciated by those who had hitherto passed the drive, under shadow of the old fabric which, with numerous windows, occupied by troopers, nude or in undress, dominated over the Fair-mile carriage promenade on one side, and over Kensington main route, which it darkened and restricted, on the other side; the whole marginal plot being about 1,420 ft. in length by 190 ft. in width, for half of its extent, being thence reduced in quadrature by an equable line to only 90 ft. at its western extremity. It should, however, be remembered that the old barrack advanced 20 ft. on the Knightsbridge-road, and also 20 ft. on the Park drive of the south frontage, thus forming the Straits of Knightsbridge.

There is no other portion of the park borders so open and valuable, commanding the drive, the Serpentine,' and indeed the whole park and plantation to Bayswater-road, the special advantage of the latter being the continuous planted and shrubbed walks, which lend grace and dignity to the noble ranges of terraces and mansions that occupy its whole extent; but the quality and character of the terraces and mansions along the still more important Kensington boulevard establish it as the first in London.

Well, the opportunity now offers of making to the public a concession which never can recur again if the Guards' barracks should be reconstructed on the same spot. To the public the great value of Hyde Park is its extensive and unobstructed marginal drives, rides, and planted walks, and since the demolition of the old brick walls and the substitution of a continuous iron railing round the *enceinte*, a great solace has been afforded to the border houses of Park-lane and the Notting-hill and Kensington roads, whilst at the same time a sense of enlargement was conferred upon the park itself by removal of the obscene and unsightly bastion of decaying brick-work.

It is thus demonstated that open park borders and plantations are of inestimable value to the external roads, and that whilst the worth of buildings or sites is trebled or quadrupled by the opening, so their value would be incalculably diminished by the obtrusion of obstructive buildings.

If there were no other site to be had, suitable to the requirements of her Majesty's regiment of Guards, the repugnance to change position might be accepted; but there are several others much better in all respects, affording space for truly commodious buildings and drill-grounds, equally near to the palace, more open and airy, besides being removed from a crowded public thoroughfare and eight public-houses! For example, there is one site, an equally elevated position north of the Ranger's house, in a part of the park but little frequented; here at present there is an expropriation of nearly twenty acres, occupied by the Ranger's lodge, and, say, ten acres of enclosed land, a police barrack, a sergeant's guard barrack, an ordnance office with small enclosures, a lumber-yard containing timber and park waste, with donkeys, &c.; an engine-house, park-keeper's lodge, and various addenda; but there is ample space on high ground adjacent and northward for the utilisation of, say, ten acres more, to erect a substantial and convenient barrack for the whole regiment, if needed, and that without the least inconvenience to park wanderers or rangers, who rarely approach this retired centre; indeed, were it not that a footway leads between the police and sergeant's guard barracks to the Serpentine Bridge, all wayfarers would avoid this unattractive, if not disgusting, concentration of unsightly hovels and irregular squalid buildings, erected without regard to appearance or utilisation.

This position would be scarcely a quarter of a mile north from the late barracks, equally near to both Kensington and Buckingham palaces, and at the same time would give ample room

and field for the troops, with a far purer atmosphere; certainly the officers' mess-room could not command a view of the Ladies' Fair-mile, but an open of beautiful woodland scenery, with much more commodious quarters, might make some amends for the sylvan transition.

Should the central position herein cited be thought objectionable, there are two others within the range of Kensington-gardens, and nearer to the palace—one on the western outlying plot between High-street, Kensington, and the guard-house, nearly in front of the old palace; and the other on a plot of over six acres, between the palace grounds and Bayswater-road, both of which offer ample scope for the accommodation of the whole regiment. Both of these plots, although so near the palace, are in a state of neglected waste; one as a cattle pasture (fenced around), the other an area open to the public, various old buildings, stables, antiquated villas, two guard-houses, &c.; whilst in like manner the shrubbed lawn on the east front of the palace is now converted into a kitchen garden, with numerous hot-bed frames for the yield of early vegetation.

This old palace, a great part whereof was built by Sir Henry Finch before 1630, who was owner of the estate until 1690, when William III. bought it for construction of a royal palace, is composed of varied additions made during the reigns of George I. and George II., who with Queen Caroline made this their treasured home. It was also occupied for some time by George III., and lastly our gracious Queen Victoria was born there. Now, however, it is used only as a retirement and refuge for friends and relatives of royalty and for pensioners, and is in fact rapidly falling into decay; so that thorough repair, if not reconstruction, is urgently needed; unless removal of the old pile be determined on, together with reconstruction on a better and more central site than its present position upon the park wall at its western boundary. Whether a new palace suitable to the dignity of the Sovereign be constructed as suggested, no time should be lost as to Knightsbridge Barracks, since the advance of improvements in all parts of this great city renders more palpable the great blot and default caused by the re-erection of such a building on the most valuable part of our principal western thoroughfare. Should money be the object, Government could acquire an annual income of 3,000*l.* if not more for the plot. But when the advantages conferred upon the public are taken into consideration,—a widened thoroughfare,—a planted and shrubbed border of one quarter mile in extent,—surely the authorities cannot hesitate in completing our beautiful park by a concession of such small moment to the national exchequer; more especially when it is considered that millions of loyal subjects resident in London will in frequenting their improved ride and promenade duly appreciate the favour and feel grateful for the benefits conferred.

T. H. H.

A SURVEYOR'S CLAIM FOR "QUANTITIES."

HILL *v.* REYNOLDS.

This case was heard in the Brighton County Court on the 8th inst., before Mr. F. H. Lascelles, Deputy Judge. It was an action to recover the sum of 28*l.* 15*s.* for a surveyor's charges. Mr. Warner Sleigh appeared for the plaintiff, and Mr. F. Merrifield for defendant.

Mr. Warner Sleigh said his client was a surveyor, carrying on business in London, and he claimed for a bill of quantities for the erection of a shop and warehouse at 2½ per cent., and for a plan, in lithograph, which had been supplied to the defendant. The facts did not involve any dispute as to figures, but the point to be decided was whether the money was owing at all. In July, 1875, Mr. Hill received instructions from Mr. Broadbridge, who was the owner of the premises referred to in Western-road, telling him to advertise for tenders for the work. He accordingly invited tenders, and five were received, that of the defendant, who was a builder in Brighton, being among them. His estimate for the work was originally 1,598*l.*, which was based upon plans and quantities drawn up by Mr. Hill as a surveyor. The estimate was subsequently reduced to 1,150*l.* In August, 1875, Mr. Reynolds, the defendant, drew up a summary of the work, and sent it to Mr. Broadbridge, together with a letter which would convey the idea that the whole matter was settled on Mr. Hill's plans. Several letters passed between the plaintiff and defendant, but one was alleged to have been sent by the latter which Mr. Hill entirely denied ever having received. In this letter Mr. Hill was informed that the defendant would not pay for the surveyor's charges. Mr. Warner Sleigh then made allusion to the evidence he was about to call, and concluded by saying that his client considered that he was entitled to the customary fees from the defendant, as the builder, and had no claim whatever against Mr. Broadbridge.

The plaintiff deposed that, in July, 1875, he advertised for tenders for building a warehouse in the Western-road, Brighton. The defendant tendered among others, and he (plaintiff) sent in his bill of charges to him, including 2½ per cent. for the quantities and 7*l.* for the copy of the plan of the work. He received a letter from defendant after that saying he had agreed with Mr. Broadbridge to undertake the building of his warehouse in Western-road for 1,150*l.* Before that letter was received he had several conversations with Mr. Broadbridge and the defendant about what the work was to cost. He sent in his account for 30*l.* as percentage and 7*l.* 7*s.* for a copy of the lithographed plan.

Mr. A. R. Farr, surveyor, of North-street, deposed that the custom of the trade was for a builder to pay a percentage to the surveyor for taking out the quantities.

Mr. Edward Broadbridge said in July Mr. Hill prepared the plans and specifications referred to by his direction. Ultimately, the defendant's contract was signed. He always understood that the defendant would have to pay Mr. Hill's charges. No agreement to the contrary was ever made. He had never been applied to for these charges, and it was never suggested that he was liable.

The defendant, sworn, said the contract put in contained mention in several places about the plans and specification, but all reference to the quantities was omitted. This was done at his particular request, for he represented to Mr. Broadbridge that if they were included it would involve endless trouble and confusion. The quantities of Mr. Hill were so utterly useless and incorrect that he could not use them. Mr. Hill, during the whole time the work was going on, never said one word of his having a claim against him for preparing the bill of quantities. With regard to the plans claimed for, he never received the copy, as alleged. On the 8th of September he wrote to Mr. Hill, saying that his surveyor's charges would not be paid by him.

The judge, in giving his decision, said he was of opinion, in the first place, that the plaintiff had made out his right, in accordance with the custom of the trade, to charge the builder for the quantities, and unless it had been proved that he had waived that right, something was due to him. It was said for the defence that the quantities proposed by Mr. Hill were useless; but he could not follow them in this, because they were used for the purposes of tendering, and, therefore, plaintiff had a right to charge for them. He was of opinion that there had not been any recision of the quantities in the contract entered into, and had determined to find for the plaintiff upon that account. He could not, however, find for him on the other claim, so there would be a judgment for 21*l.* 8*s.*, with costs.

A WORKMAN'S CLAIM FOR PERSONAL INJURIES.

GRAMSHAW *v.* HARDY.

In this action (heard in the Uxbridge County Court on the 13th ult.), the plaintiff was a journeyman painter, and he sued Mr. Thomas Hardy, builder, Cowley, for the sum of 100*l.*, as compensation for injuries sustained by reason of the latter's neglect. The proceedings were originally instituted in the Common Pleas division of the High Court of Justice, but the matter had been remitted. Mr. R. Harris was counsel for the plaintiff, and Mr. E. Lloyd represented the defendant.

In his opening statement Mr. Harris said it appeared that in April last the defendant had a job at Watercroft House, Gerrard's Cross, and four ladders were taken there from his place for the purpose of being used by the painters and others engaged in the work. If a master found material for his workman, and took reasonable care that it was fit for use, and the workman, knowing it to be dangerous, used it and met with an accident, the master would not be liable; but, on the other hand, if the master did not use reasonable care in supplying proper materials, and the workman, without knowing the danger, consequently met with a mishap, the master would be liable. In this instance there were ladders of various sizes. Two were spliced together for the work of the plaintiff, and on the 20th of April he and another workman reared them against the front of the building for the purpose of getting at the work. Plaintiff went up the ladder, and after passing the spliced part, in fact, when he was near the top, the sides of the small ladder gave way from sheer rottenness, and he was precipitated to the ground, a distance of 28 ft. He sustained a compound fracture of the leg.

On the part of the defendant it was contended that the ladders were spliced together and soused without his sanction or knowledge, and that the plaintiff had been guilty of contributory negligence.

The judge summed up at considerable length, laying particular stress upon its being the duty of a workman to take all reasonable precaution.

The jury retired to consider their verdict, and returned into court in about an hour and notified that they could not agree.

The foreman said they agreed to a certain extent, but the matter turned upon the question as to how far the man did not use caution. His own mind was perfectly clear on the point, but he could not persuade the four other gentlemen to the same way of thinking.

The judge said the point was the difficulty in the case, and advised the jury to retire again. This they did, and they remained in consultation some considerable time longer, and at last arrived at a verdict for the plaintiff—damages 15*l.*

A CLAIM AND A SET-OFF.

JACKMAN *v.* LIVESEY.

This was a case heard in the Newport (I.W.) County Court on the 7th inst. The claim was for 19*l.* 12*s.* 7*d.*, for work and labour done. Mr. Henry Ford appeared for the plaintiff, a builder at Ventnor, and Mr. T. H. Urry for the defendant, a civil engineer and surveyor, at the same place. Defendant pleaded a set-off of 23*l.* 7*s.* 1*d.*

Plaintiff deposed to being engaged by defendant to do certain carting at 1*s.* per hour, and his present claim was fair and reasonable. Several items in the set-off were objected to as exorbitant, especially a charge of 10*l.* 12*s.* 4*d.* for 196 blue Staffordshire window-cill blocks, being at the rate of 1*s.* 1*d.* each, when it was asserted by Mr. Ford, for the plaintiff, that they could be obtained wholesale for 1½*d.* each, or retail for 2*d.* or 2½*d.* On this point defendant stated that he bought the bricks eleven or twelve years ago, of the patentee, John Taylor, of London, and gave 1*s.* each for them.

Mr. Ford produced one of the blocks, or bricks, and denied that it was a patent article, there being no mark upon it to show that it was so protected. It was monstrous to assert that a brick of this kind was worth a shilling and a penny.

In the course of his evidence the plaintiff produced a book containing entries of the work done for the defendant, and he stated that it was made up day by day from an account given him by his carter; but the carter (Charles Colenutt) deposed that the book produced was not the one in which his master entered the accounts as given by him.

After hearing the several witnesses, the judge, referring to the Staffordshire bricks, stated that if the defendant bought them at a time when they were protected by a patent, that was no reason why he should now charge for them a price which was far in excess of their fair market value. He should allow only 3*l.* for the blue bricks, striking off that item alone, 7*l.* 12*s.* 4*d.* The plaintiff's claim would be allowed, 16*s.*, and deducting in all 10*l.* 11*s.* 2*d.* from the defendant's set off, there would remain a balance of 8*l.* 5*s.* 5*d.* due to the plaintiff, and for that amount he gave judgment.

A CURIOUS CASE.

LACEY *v.* BRIDGMAN.

This was an action at the Surrey Assizes, on March 17 (before Mr. Justice Field and a common jury), to recover from the executor of a deceased gentleman named Bridgman, the brother of the defendant, a sum of 189*l.*, alleged by the plaintiff to have been lent to the deceased during his lifetime, and which had not been repaid.

Mr. Day, Q.C., and Mr. Reid, were for the plaintiff; and Mr. Willis, Q.C., and Mr. Davies for the defendant.

The facts of the case were of a very singular character. The plaintiff was a builder and surveyor; Bridgman followed the same occupations, and they appeared to have been on friendly terms until the death of the latter, which took place six months ago, when the present claim was brought against his brother, who was executor under his will. The case on the part of the plaintiff was, that during the years 1871 and 1872 he had lent the deceased various sums of money, amounting to nearly 200*l.*, and he produced cheques payable to the deceased, which had passed through his banker's, and he swore to the loans having been made. The claim was resisted by the executor on the ground that the deceased was a person in good circumstances, who was not likely to have required such a loan, and it was also contended that the plaintiff, being in pecuniary difficulties at the time, was not in a position to lend money to any one else. The fact of the supposed loans having been made in 1871, and no application having been made for repayment until several years afterwards, and not until the supposed borrower was dead, was also relied upon by the defendant as evidence that there was no foundation for the claim that was now set up; and Mr. Herrick, a sheriff's officer, was called to prove that he had a number of warrants against the plaintiff at the time of the supposed loans. The cheques produced on the part of the plaintiff were explained by the suggestion that the plaintiff had himself borrowed money of the deceased gentleman, and that he gave these cheques in payment of the money so lent, and that there was no ground for supposing that they related to money that he had advanced to the deceased.

The jury returned a verdict for the defendant.

A "FINE" ACCOUNT.

LOVEJOY *v.* MULKERN.

The plaintiff (Chancery Division, March 17), an "advanced member" of the Birkbeck Building Society, in 1871, borrowed from the society, in the usual manner, 400*l.* on mortgate at 7½ per cent., and arrangements were made that he was to repay the money and interest by monthly instalments of 30 guineas; but such instalments not being paid, the society took possession, and the plaintiff brought an action for redemption of the mortgage and estate. The matter was referred to Chambers for taking the accounts, when the society brought in an account for 4,687*l.*, of which 2,939*l.* was for fines, which they claimed to be entitled to charge in conformity with Table 4 of the rules applicable to building societies. The case now came on upon an adjourned summons from Chambers.

Mr. Cookson, Q.C., for the plaintiff, submitted that the amount of fines was excessive, and that the society had no right to claim fines for more than six months.

Mr. Waller, Q.C., and Mr. Hemmings for the society, contended that they were justified, under their rules, in charging the amount which they had claimed.

The Master of the Rolls said the Act of William IV., under which this society was constituted, enabled building societies to impose fines, subject to this, that the fines and liabilities must be reasonable. In this case he was of opinion that the charges were unreasonable, and they had no power to impose any fines for non-payment of the instalments of the debt beyond the first six months. What they had done was remarkable. They had charged the plaintiff with fines at a progressive rate for the instalments. For instance, the twenty-third instalment was 30 guineas, and the fine was 32*l.* 4*s.*, which was over 1,200*l.* per cent. per annum; but the charge in respect of the sixtieth instalment was 62*l.* 12*s.*, or more than 3,600*l.* per cent. per annum. It was his lordship's duty to construe the rules with an anxious desire to put a reasonable construction upon them, and he was of opinion that, according to such reasonable construction, there was no provision for penalties after six months. He must decide that, according to the true construction of the rules, the

penalties ceased at the expiration of six months. The consequence was that only 21*l.* 14*s.* was payable by way of fines, and the matter must be remitted back to Chambers to take the account upon that footing. The society should be made aware that in future they could not be allowed to charge fines in addition to interest upon a mortgage.

PROGRESS OF THE TAY BRIDGE.

THE engineer's report as to the progress of the Tay Bridge, issued with the half-yearly report of the directors of the North British Railway, is interesting, in view of the recent accident.

The engineer reports that the whole of the eighty-five piers are placed in position. Seventy of these are completed, having the permanent girders placed thereon, with cross girders and timber platform laid for about 2,375 ft., and 3,074 ft. of handrailing erected. Of the remainder, five piers are completed to the full height of string-course, and the girders of the spans laid thereon. One pier has 2 ft. of brickwork built above brick block. Two large caissons are sunk to the requisite depth; one is one-third filled with concrete, the other is made ready to be filled. One of the 21-ft. caissons is thoroughly filled with piles, and ready to receive the concrete foundation; and the last of the 21-ft. caissons is placed in position in the bed of the river.

The weather since last report has been rather unfavourable for this work, severe gales of wind being very prevalent, in one of which a vexatious accident occurred:—

"When the workmen were in the act of raising a set of 245 ft. girders, to allow cross-box girders being placed on the top of the columns of piers for the main girders resting on, a gale suddenly sprang up, causing the suspended girders to vibrate considerably, and as darkness came on the workmen were obliged to leave the girders hanging on the raising apparatus; the wind, being gusty, kept the girders vibrating, and it would appear, from the position in which the fallen girders were found lying, they must have wrought themselves out of position and canted eastward, smashing in their fall the columns of the piers on which they were hanging. No damage was done to the built portion of the piers of which the cast-iron columns were so far broken, except a few stones of the string-courses that have been slightly disturbed by the fallen *débris* of the columns.

It is gratifying to be able to state that neither on the night of the accident, nor at any other time when severer gales prevailed than on that night, has the slightest damage accrued to any part of the bridge placed in a permanent position."

MASTERS AND MEN.

Durham.—At the usual weekly meeting of the joiners out on strike at Durham, held on the 8th inst., it was reported that several men had left the city, having obtained work elsewhere since last meeting. It was unanimously agreed to submit to no reduction in wages.

Dullatur.—On the 6th inst. the quarrymen working at Mr. Neilson's quarry came out on strike for an advance of ½d. per hour. The present rate is 7d. per hour, and they demand 7½d. Mr. Neilson is endeavouring to bring men from a distance to fill the places of those on strike.

Coupar-Angus.—The master joiners in Coupar-Angus have agreed to raise the men's wages ½d. per hour.

Glasgow.—The German Consul in Glasgow has been in communication with certain officials connected with the Associated Carpenters' and Joiners' Society, to obtain information regarding the position of that trade, with the view of laying it before the German Government. The Consul wished to know the present rate of wages, the result of the late strike, and several matters of a similar nature.——According to the *Scotsman* there is perhaps no trade where the restriction on the number of apprentices employed is more rigidly carried out than amongst the plasterers. For some time they seem to have been in a position to dictate terms to their employers on this subject, and the latter have had quietly to accept them. To a certain extent, the restriction has unquestionably tended to keep up the rate of wages, and for some years there have been no tradesmen better paid than the plasterers. At the present time, for instance, it is difficult to get workmen at 1*s.* an hour, and in many cases 1*s.* 2*d.* has to be paid. So far the men have had the best of it, but already the prohibitory clause with reference to apprentices is beginning to tell on the trade in another way. Plastering work has of late been such a serious item in the expense of building, that in a great many cases it is being dispensed with as far as practicable. For instance, at the present time several buildings in Glasgow, intended for shops and warehouses, instead of having the walls plastered, are being lined with wood,—a plan which doubtless has many objections, but which, if carried to any great extent, must undoubtedly affect seriously the future of the plastering trade. The plasterers, however, seem still determined to keep down the number of apprentices to the lowest possible ratio.

Aberdeen.—The Masters' Association have resolved to accede to the request of the house carpenters of Aberdeen for an advance of wages to the extent of ½d. per hour,—the present rate being 7d. per hour. They have, however, rejected *in toto* the bye-laws proposed by the men as inimical to the interests of trade.

Elgin.—The joiners in Elgin, about forty in number, have struck, in consequence of the masters refusing to accept new bye-laws.

Bromsgrove.—The strike of nailmakers against the proposed reduction in wages of 10 per cent. still continues. A great amount of destitution is prevalent in the district, especially among those who have families. The committee of the Nailers' Union are doing everything in their power to relieve those who are not members of the Union by collecting subscriptions.

London.—Messrs. Schofield & Co., of the Steam Saw-mills and Stone-works, Stewart's-lane, Wandsworth, have issued the following circular to firms in the building trade:—

"We take the liberty of enclosing the copy of a letter we have sent to some of the daily papers, as it will acquaint you with our motive for addressing you. It is needless for us to expatiate on the evils to the building trade arising out of the injudicious and vexatious action of the various unions of the workmen employed by it; in all probability you have had at some time or other personal experience in the matter. You are doubtless also aware of the fact that many of the respectable men who for some cause or other have been induced to join a union are dissatisfied with several of its rules, and object to the loss of wages imposed upon them by strikes and their consequences; at the same time they cannot afford to forego the pecuniary advantages to which their weekly contributions, extending in many cases over a number of years, entitle them. It has struck us, and it is on this point that we beg to solicit your opinion, that if the employers in the building trade were to contribute towards the formation of a fund for a society or union, having for object to counteract the arbitrary action of the present trades unions, we should detach many of the best and most skilled workmen from them, and that these, strengthened by the accession of non-unionists, would form a body of men equal in work, if not in number, to their rivals. We would suggest,—1. That the proposed association should be called the Independent or Freemen's Union. 2. That the employers should establish the fund, and the men contribute to its support by weekly payments, as they now do to the trades unions. 3. That the one fundamental rule laid down by the employers should be that every workman should be allowed to work when, how, and as long as he liked. 4. That all rules as to internal management should be left to the workmen themselves. The intelligent workman would easily perceive the advantage of contributing to an association whose funds would not be called upon to assist men on strike, but be entirely devoted to supporting him and his family in times of need. We do not pretend to lay before you a complete scheme or code of rules for carrying out this idea, but simply to solicit your valuable advice on the subject. In conclusion, we beg to say that we are prepared to assist by a donation the foundation fund of an institution similar in its objects to that now roughly sketched out."

In reference to this matter, Mr. John Chaddock, on behalf of the London Masons' Union Committee, denies the assertions of Messrs. Schofield & Co. that the Union had acted in a tyrannical and oppressive manner by striking at an inconvenient time, and he hopes Messrs. Schofield will not address a circular to the building trade with the view of forming an independent union, such a proceeding having previously resulted in total failure.

Stirling.—The joiners are agitating for an increase to their wages of 1d. per hour.

"Simon" Testimonial.—The committee formed for the purpose of presenting a testimonial to Mr. John Simon, C.B., late Medical Officer of Health to the Privy Council, in recognition of his eminent services in sanitary science, have learned his decided objection to receive any testimonial presented to him personally, and have accordingly arranged that a bust, in marble, of him shall be executed and presented to the Royal College of Surgeons, the Council of the College having unanimously agreed to accept such bust. The subscription is to be limited to the amount of One Guinea, and Mr. Alfred Haviland, at 1, Adam-street, Adelphi, is treasurer.

SURVEYORSHIP ITEMS.

Dundee.—Mr. James Callen, road surveyor, Maryfield, Dundee, died at his residence in Dundee, on the 6th inst., in his sixty-second year. About two months ago he resigned his office. In 1849 he came from Mid Calder to reside in Dundee, in order to carry on the work of surveyor of roads in the county, under Mr. M'Connell; and latterly, on Mr. M'Connell resigning, Mr. Callen was appointed surveyor for the whole county. This office, however, he had not long held when the road trustees of the county deemed it prudent to divide the county into districts, and to appoint a separate surveyor for each district. When this division was made Mr. Callen was appointed surveyor of the roads in the Dundee district.

Bury.—At a meeting of the general purposes committee of the Bury town council, on the 12th ult., Mr. Cartwright, surveyor to the Dukinfield Local Board, was elected as borough surveyor for Bury, at a salary of 350*l.* per year. There were originally seventy-two applications, but the candidates were reduced to four, from whom the final selection was made,—Mr. Cartwright; Mr. Hunter, borough surveyor, Preston; Mr. J. H. Nuttall, surveyor and architect, Bury; Mr. J. Sellers, assistant surveyor, Bury.

Bridport.—At a recent meeting of the Bridport Highway Board, Mr. Cox, the surveyor of highways, who has absconded, was declared dismissed from his situation. Although (according to the *Dorset County Chronicle*) there has been a most rigid examination of the accounts, nothing has been found to show Mr. Cox is indebted to the Board, but, on the contrary, so far as it goes there is a balance due to him. The accounts for 1877, however, show nothing, as he has made no entries. Mr. Cox had 250*l.* per annum from the Highway Board, 50*l.* from the Turnpike Commissioners, and 10*l.* from the Bridport Local Board. The new surveyor will have the turnpikes to survey without the extra salary.

"IMPROVEMENTS" AT HASTINGS.

A CORRESPONDENT of the *Hastings Independent* asks whether anything can be done to improve in some way the mode of laying out new streets in the borough. "Year after year," he says, "we permit our builders (in their crass ignorance) to destroy the beauty which they themselves would be the first to appreciate if we had a Ruskin to set it before them. Only the other day I saw an instance of the stupidity and want of foresight in permitting streets to be run up anywhere. The West Hill is being built upon, and if any person will walk along the street (Plynlimmon, I think) from the Castle towards Emmanuel Church, he will find that a new street has thrust a couple of houses right in the view, destroying the vista which could be opened up to the Mount Pleasant-road and perspective beyond." After giving further instances of the kind, the writer says,—"Go where you will, the same sad want of taste and foresight is apparent. . . . . Now, when a new Hastings is spreading on every hand, the people of the present day should not repeat the sins of their forefathers." The correspondent asks, in conclusion,—"Could not a small committee be formed of the Philosophical and Athenæum Institutions to co-operate with the Ratepayers' Association in drawing up some plan by which all future streets might be regulated? Perhaps one or two of the rising young architects of your town would give their services gratuitously?" If the Town Council shows itself indifferent to the preservation of the natural beauties of the town, the inhabitants (if they attach any importance to the matter) have the remedy in their own hands.

BLACK PUTTY.

SIR,—I have heard of a new mode of slating roofs, which is much more economical than the old system. I will explain:—Slates placed in straight lines, like greenhouse glazing, simply hanging over each other about 3 in., and every slate to be bedded on each side in black putty in wood rabetting. I should esteem it a great favour if I could obtain through the *Builder* instructions how to make a black putty of sufficient tenacity to be watertight for the above purpose. ANTI-PLUVIAL.

ANOTHER CAUTION.

SIR,—A man representing himself as our agent is obtaining small sums of money from builders under the pretence that he is able to place the erection of a warehouse in their hands. This person has no authority from us, and we wish to warn the trade against him. Your insertion of this letter in your next issue will oblige.

CROSSE & BLACKWELL.

SCHOOL BOARD SCHOOLS IN MANCHESTER.

Lloyd-street, City-road.—On the 24th ult. the memorial-stone of the new Board schools in Lloyd-street, City-road, was laid by Dr. John Watts. The schools, which are well on towards completion, contain accommodation for 500 boys and 500 girls. On the ground-floor there are two infants' schoolrooms, 50 ft. long by 30 ft. wide, with two class-rooms and teachers' room to each department. On the first floor the arrangement of the rooms is similar, and the apartments are approached by separate staircases, the girls entering from Hamer-street and the boys from Camden-street, while the entrance for the infants is in Lloyd-street, so that the departments are entirely isolated. Two large playgrounds are provided, approached by covered ways which connect them with the main building. The elevation of the building towards Lloyd-street has a frontage of 120 ft., and the ends of the main schoolroom project to the front boundary line. The portion of the building between the wings is set back about 4 ft., and in the centre is a clock tower, rising to a height of 100 ft. The style is Gothic, and the walls are faced with picked common bricks, the arches, chimneys, and eaves course being of stock bricks. The dressings are of stone and terra cotta. The rooms are all lofty, and ventilation is effected by the use of Messrs. Shillito & Shorland's "Manchester grates." The architect is Mr. Henry Lord, and the contractor Mr. James Herd. The total cost of land, building, and furnishing will be about 10,000*l.*

Abbott-street, Rochdale-road. — On the same day Mr. Anderton laid the memorial-stone of the new schools which are being erected in Abbott-street, Rochdale-road. The site on which these schools are being erected is bounded by Abbott-street, Slater-street, and Chapman-street on three side, and by cottage property on its fourth side. It contains about 1,134 square yards, and is nearly rectangular in shape. The buildings, which are being carried out from designs submitted in competition by Mr. William Dawes, are Gothic in style, and are being constructed of brick slightly ornamental in its treatment. In the centre of the roof a square wooden bell-cot rises 26 ft. above the ridge, and terminates in an ornamental iron vane. In the winter months the air will be warmed as it passes through flues carried from "Manchester grates" supplied by Messrs. Shillito & Shorland into the various rooms. Extraction flues in connexion with these grates provide for carrying off the foul air. These schools were designed originally to accommodate 800 children, but by an amended arrangement 644 children only will be provided for, although the building covers the same area as that intended for the 800 children. As now being carried out, there will be two infants' schoolrooms, each 25 ft. by 30 ft., with a class-room, 16 ft. by 17 ft. adjoining, on the ground floor; and on the first floor a boys' schoolroom, 45 ft. by 30 ft., and a girls' schoolroom of the same size. These rooms can be thrown into one by the opening of sliding doors provided between them. The ground-floor rooms will accommodate 204 infants, and the upper floor rooms 220 girls and 220 boys. The buildings are being erected by Mr. James Herd, builder, Hulme, under the superintendence of the architect. The total cost, including land, will be about 7,000*l.*

Armitage-street, Ardwick. — Mr. William Hughes on the same day laid the memorial-stone of the new schools in Armitage-street, Hyde-road, Ardwick. The site chosen for these schools has an area of 4,000 yards, with a frontage to Armitage-street of 100 yards. The building is in the Gothic style, and has a façade to Armitage-street of 65 yards. This front is broken up by a central projection and end wings, each gabled and finished with carved finials, with the addition of gablets to the upper-floor windows, and the bell-turret, which rises 30 ft. above the ridge. The walls externally are throughout faced with picked common bricks, with blue brick bands, stock-brick facias, and arches. The ground-floor and staircase windows are finished with stone jambs, mullions, and transomes, the heads of the latter and the large central windows on the upper floor being finished with plain traceried heads and moulded stone labels. The ground-floor is arranged for infants in two departments, each with its own entrance. These are placed in the centre of the building. Each department comprises convenient cloak-room. School-room, 56 ft. long by 30 ft. wide, and 15 ft. 3 in. clear height; and babies' room 20 ft. by 21 ft., and 15 ft. 3 in. clear height. This room is accessible both from the main room and entrance corridor. The upper floor is appropriated to the boys and girls, each department having its own entrance and staircase, and comprising a school-room 56 ft. long by 30 ft. wide and 18 ft. mean height; two class-rooms, one 21 ft. by 20 ft., the other 20 ft. by 18 ft., each 15 ft. clear height; a cloak-room 18 ft. 6 in. by 18 ft., and a teachers' room or storeroom. There are three large playgrounds—one for boys, one for infant boys, and one for girls and infant girls; in each of these is a shed, in order that the playgrounds may be used in wet weather. The building is designed to accommodate 1,040 children, viz.:—500 infants, 270 boys, and 270 girls. The floor space allotted to each child is nearly 9 square feet, and the air space 135 cubic feet. The contract for the building, including boundary walling, but exclusive of furniture and fittings, is 7,387*l.*, and all, inclusive with land, is about 13,000*l.* The works are being carried out by Mr. J. Herd, builder, of Hulme, under the supervision of the architects, Messrs. Royle & Bennett.

STATISTICS AS TO STREET PAVING IN BRADFORD.

THE question of street-paving is, in more than one respect, a vexed one in Bradford, owing partly (according to the *Bradford Observer*) to the slow progress made by the corporate officials during a period dating no further back than half a dozen years, and mainly to the rapid extension of the town for the past ten years. With the view of showing what work has actually been done by the Corporation during the past ten years, the *Observer* gives the following statistics, which are taken from the official reports. They refer to the streets, public and private, which the Corporation have been called upon to undertake and put into repair,—of course, charging the cost of work done in private streets to the owners:—

	Streets.	Number.	Cost.
1866...	Public ...	16 ...	£2,415 17 10
	Private ...	5 ...	2,010 10 9
1867...	Public ...	20 ...	8,230 10 4
	Private ...	8 ...	2,889 10 5
1868...	Public ...	35 ...	8,184 12 2
	Private ...	19 ...	(No cost given.)
1869...	Public ...	9 ...	7,736 13 11
	Private ...	6 ...	2,506 11 2
1870...	Public ...	— ...	11,394 4 4
	Private ...	51 ...	12,504 4 11
1871...	Public ...	17 ...	14,321 19 4
	Private ...	20 ...	5,530 0 4
1872...	Public ...	— ...	15,473 3 0
	Private ...	30 ...	9,765 16 5
1873...	Public ...	— ...	25,822 4 11
	Private ...	43 ...	16,089 8 0
1874...	Public ...	— ...	21,374 2 3
	Private ...	62 ...	21,920 19 1
1875...	Public ...	— ...	20,778 13 1
	Private ...	41 ...	18,499 2 3
1876...	Public ...	— ...	22,618 17 8
	Private ...	49 ...	27,995 3 8

In the returns dating from 1870 the numbers of public streets are not given, but the best idea may be gained from a statement of the expenditure involved, which is appended. From the returns it will be seen that since 1870 the Corporation have done work for private owners in nearly 300 streets, against the small number of thirty-eight in the four preceding years. Last year the gross sum expended in paving, flagging, channelling, &c., public and private streets amounted to over 50,000*l.*, against 4,426*l.* in 1866. This is, of course, exclusive of special street improvements, public and private sewerage, &c.

St. Werburgh's Tower, Bristol. — The *Bristol Times and Mirror* says:—A new hitch has taken place in connexion with this "Never-is-but-always-to-be-settled" subject. It will be remembered that when the proposal was made to the Council to let the tower stand, on the money required being found, it was resolved to refer it to the Bishop and Archdeacon (without whose consent no definite course could be taken) to say on what conditions the wish of the memorialists would be complied with. On Tuesday, the 6th inst., at the meeting of the Streets Improvement Committee, the Bishop and Archdeacon's reply was received to the effect that they consented to the retention of the tower on condition that the Town Council held themselves responsible for any injury done to persons or property should the tower become insecure, or fall while the body of the church was being removed. The Town Clerk said he could not advise the Corporation to give any such guarantee, and a large majority of the committee accordingly determined to refuse it.

THE BRIBERY BILL.

SIR,—In your version of the Bill of Bribery of Agents, founded on my suggestions, there is an important omission of a "not." I wrote "the Court shall *not* be bound to act on the information of either party alone, without some confirmation," or something to that effect. I have no time to write more on the subject now, except that I was glad to see the R.I.B.A. had taken it up in the right way, and perceived that such legislation is becoming necessary to protect honest men. EDM. BECKETT.

INHABITED HOUSE DUTY.

SIR,—Now that this question has been once more brought before the notice of the Chancellor of the Exchequer by the influential deputation from London and Liverpool which waited upon him last week, I venture again to call attention to the injustice the owners of house property in the metropolis are subject to, in the hope that it may be redressed. A building, if any portion (however small) is occupied by a professional man, and the care-taker sleeps in the house (as stated by Mr. Alderman Lawrence), is subject to house duty. This necessitates either the dismissal of the care-taker or housekeeper,—causing great distress and loss of employment to a respectable and trustworthy class, and throws extra responsibility on the police, who have notice given them that the premises are left unoccupied,—or a landlord declines to let his rooms to professional men. In neither case will the revenue receive any benefit, whilst great injustice and inconvenience is occasioned. It must also be remembered that most of the occupiers, as well as the owners, have houses in which they dwell, and for which they pay Inhabited House Duty, and bear their fair share of taxation. It has always appeared to me that one of the effects of good government was to obtain the necessary amount of revenue from the people, with the least possible amount of pressure and annoyance. I know that at the last City election the Liberals lost numbers of votes from the oppressive surcharges for income-tax, for which the late Government had the credit, whilst probably they arose from some over-zealous minor official. It seems now that the same gentleman, or a kindred spirit, is moving in the House Duty question. A case has been brought before me at the present time in which the ingenious surveyor of taxes contends that premises, a portion of which is occupied by an auctioneer, are liable to house duty, he being a professional man, although the licence granted by the Inland Revenue Office (the same department) expressly recites "to exercise the trade or business of an auctioneer." The argument, I am informed, is that the auctioneer "exercises his trade" away from his office, and that when there his business becomes a profession. Can ingenuity go much further?

J. R. C.

COMMISSIONS.

SIR,—Clients are not quite so green as they seem to be considered by the N.W. gentleman who advertises that he gives 10 per cent. to architects; at least, our clients insist in such cases that we shall take such commissions and hand them over.

We can show you proofs that this is a fact, whether or not it might be considered by the N.W. gentleman as consistent with the honour which should exist between conveyancers.

X. Y. & Z.

BROWN PAPER.

SIR,—Having an eye for defects, and, as some would say, also a tongue for complaints, allow me to ask our paper manufacturers why it should be that on holding up to the light almost every sheet of brown paper, innumerable pin-holes may be seen in it? Can it be through the want of amalgamation of the ingredients, or the carelessness of the workmen? In each case the defect could be remedied. Should the manufacturers reply by saying that it is only the inferior kind of paper in which the holes are, then I would answer that in 999 cases out of 1,000 the inferior is used, consequently there cannot be much call for the superior. A medium between the two would be preferable, minus the holes. The difficulty to find a sound sheet to fasten behind the frames of prints and pictures as a prevention of dust and smoke penetrating, prompts me to make the above inquiry. Y.

ACCOMMODATION FOR TRAVELLERS.

AT the present day much dissatisfaction exists with regard to the liquor question in this country. On all sides it is asked, what can be done to abate the nuisance arising from drink? My own experience is, that our magistracy have never sufficiently comprehended the laws made by our previous legislators for the travelling public.

Public-houses were built and licensed for the public benefit, and not for the public curse and disgrace such as they have gradually but surely been coming to. If a stranger visits London or any of our large manufacturing towns, on applying at an inn for a bed, it will usually be found that they do not let them; and yet it was for that purpose alone that they were instituted.

Our magistracy should be most jealous of the privileges, now amounting to a monopoly, granted to publicans; for were they to insist upon the law being carried out, and which laws have never yet been repealed by Parliament, viz., that they supply travellers with food and lodging, I am of opinion that it would be a beginning by paving the way to diminish drunkenness by this means. My business taking me about from place to place occasionally causes me to require to sleep at an inn. If my rest is disturbed by brawling men in the house, I should soon tell the landlord of it; and if the nuisance were repeated another night, I would not hesitate to complain to the local magistrate, who would soon compel the publican to keep his house in order.

The population of this country is steadily increasing, and, as a natural consequence in a commercial country, so will the amount of travelling increase in proportion; yet do I find less and less accommodation at inns in proportion to the wants of travellers, and, owing to publicans having been allowed to do as they please with strangers, commercial travellers have ceased to look to them as resting-places, and now have to put up at hotels that run omnibuses to and from the station for the purpose, and, as the expenses are paid by the employer, the traveller does not care what he is charged; thus the monopoly is in a few hands. But there is another section of travellers, equally respectable, whose means are not equal to justify them in going to these commercial hotels, as well as a large number of small capitalists obliged to employ travellers who would gladly see a possibility of the item of travelling expenses being reduced, and, until they choose to petition the magistracy to compel publicans to comply with the law, they need not hope for any redress from the present generation of brewers and magistrates. The only remedy that I can see to abate the nuisance is by creating fresh public-houses alongside those in existence, the landlords of which would undertake to house travellers. At the beginning of this century England enjoyed the reputation of having the greatest facilities for travelling and hospitality to strangers; now, although the amount of travelling has increased a thousand times more, hospitality to strangers has diminished: foreigners now point with exultation to their own countries as affording hospitality to travellers in comparison with what can be found in England.

May magistrates turn their attention to this, for it is this little oversight on their part that has caused publicans to become the most independent order of tradespeople in England, which need not be the case if the law is upheld.

J. B. WATTS.

DO OUR WORKMEN RETROGRADE?

SIR,—I find from a letter in the *Builder* of the 17th inst., that "F.R.I.B.A." doubts whether English workmen are improving. I cannot, upon my own knowledge, say whether they be or be not; but I have ventured on several occasions to predict that, if the present injudicious advocacy of universal technical education, without discriminating those who do require it and those who do not, be persisted in, English workmanship will decline.

We are too apt, in the present day, to take it for granted that we can determine off hand the bearings of such questions as that of technical education, whereas questions of this nature require to be carefully pondered.

Our old weakness which leads us to admire anything which is foreign, is at the root of much of our misdirected energy in respect to technical education. France and Germany having established technical institutions, is to us a sufficient, a logical proof that we should also have them. But we forget that the *raison d'être* of such institutions on the Continent was this,—that when foreign nations resolved to enter into competition with English manufacturing industry, they had to raise workmen by a kind of forcing process; they had to endow State workshops. They knew that the workshops of England were her famous technical schools, and the establishment of technical institutions abroad was the only attempt that could be made to improvise what they did not naturally possess.

We are most ill-advisedly, as I firmly believe, endeavouring to substitute some other way of arriving at good workmanship than that which our famous workshops of old time afforded. Men who have technical education on the brain cannot discern the very important fact that most industries divide themselves into two distinct parts, which may be respectively entitled the gymnastics, and the learning, the science, of the industry. In most industries these are as separate and distinct branches of technical education, as gymnastics and learning are in our colleges and schools. And it is as possible for a man to be an excellent workman without any scientific knowledge, as it is for the greatest dunce to be the best gymnast in the school. Good workmanship depends on the perfect training of the hand and eye; good workmanship is a physical *tour de force*, is an exhibition of *leger-de-main*, entirely independent and apart from the possession of scientific knowledge. A hard-and-fast line can generally be drawn between the *leger-de-main* of the production of any manufacture, and the intelligent or scientific direction of that manufacture: so it is for the director or overseer of any manufacture that your "technical education" should be provided, and not for the workman, whose proper technical gymnasium is the workshop.

In the fine arts, the *leger-de-main* of the art must be combined with the power of intellectual directorship, or we may have, as we frequently do have, exquisite workmanship which is not fine art, and fine conception imperfectly carried out which is also not fine art. The executant and the thinker may exist as separately and as distinct as in manufacturing industry, but in the fine arts there is this difference, that there can never be perfect success unless the two are combined in one individual.

We should bear in mind, then, that we ought to observe the strictest caution before attempting to interfere with the thorough technical training, the technical gymnastics, of our best workshops. By no manner of means should we lead the craftsman to imagine that the obtaining of a smattering of science will be a substitute for the neglect of the *leger-de-main* of his craft, of the gymnastics of his special work,—for nicety of touch, dexterity of hand, and correctness of eye.

In conclusion, I would beg to state that I have seen much worse letters than that produced written by first-rate workmen. "F.R.I.B.A." appears to me to make the very common mistake of applying the test of knowledge where he should have applied that of skill. W. C. T.

SASH-PULLEYS WITH OIL-HOLES.

SIR,—I have seen the letters which Mr. Meakin referred to from myself and Messrs. Longmire & Burge to him in 1874, and have told him that they do not the least alter my recollection of the facts, and only remind me of this, which I did not mention before, viz., that when he first brought me a pulley with cast-iron axle and no oil-holes, he made me understand that that pulley was a patent one of his own. I suggested the oil-holes, treating the pulley as his in other respects, and referred Mr. Longmire to him for them to use in my house. Mr. Longmire told me the pulley was not Mr. Meakin's at all by any patent, though he got from him one which had been made with the oil-holes I had suggested. Thereupon I told Mr. Longmire to get them made where he liked, and he did so. And, as I said before, after they were used throughout my house, Mr. Meakin thought fit to buy a patent for them, swearing that he was "the true and first inventor." I need not say that even if he had been the inventor, he was much too late. Besides which, it seems, he has another prior claimant to contend with in Mr. Hart, according to his letter in the *Builder* of March 12th.

EDM. BECKETT.

Birmingham Sludge.—Sir: It has been stated that "at Birmingham it costs 750*l.* per annum to get rid of the sludge." As a ratepayer of Birmingham I wish this was the fact. At p. 35 of the "Sewage Disposal Report," the accounts show a cost of more than 12,000*l.* a year, exclusive of interest on works, &c. And the estimate of expenditure for the Saltley works for 1877 amounted to 22,000*l.* This is exclusive of the cost of dealing with the night-soil, which it was estimated would cost 48,000*l.* for the present year.—A RATEPAYER OF BIRMINGHAM.

Books Received.

Dynamics; or, Theoretical Mechanics. By J. T. BOTTOMLEY, M.A., F.R.S.E., F.C.S. London and Glasgow: William Collins, Sons, & Co. 1877.

INTENDED to form one of a series of elementary books for science classes, under the Science and Art Department. The author derives the word "dynamics" from the Greek word "dynamis," meaning force. The word "mechanics" has been used instead of the more appropriate word dynamics, for the science which treats of force. Dynamics is subdivided into statics and kinetics, the one treating of the balancing of forces, and the other of motion. It is the best treatise on the subject for its price—one shilling—that we know of.

Graphic Statics. By KARL VON OTT. Translated by GEORGE SYDENHAM CLARKE, Lieut. R.E. London and New York: E. & F. N. Spon. 1876.

IT may be true, as it is here said to be, that in England this subject has not received the recognition it merits, and that applications of the graphic method in the solution of engineering problems have for the most part been viewed as mere artifices for effecting special purposes. It appears that the present work has, in Germany, gone through three editions, but our translator has thought it advisable to omit the first portion of Professor von Ott's own work, treating of graphic arithmetic, because it "has not been much used in practice." We admit the value of the present translation, notwithstanding the omission, but we demur to the definition of the form of roof-truss shown in fig. 29, as being "The English Roof Truss." We have many bad forms of roof-trusses, of which this is one, but we hope that both the author and the translator would admit that we have some good ones; and at least one good English roof-truss ought to have been figured in the book.

Bridges: an Elementary Treatise on their Construction and History. By FLEEMING JENKIN, F.R.SS. L. & E., M.I.C.E. Reprinted from the Encyclopædia Britannica. Edinburgh: Adam & Charles Black. 1776 (1876).

WHEN Professor Jenkin was asked to undertake the subject of which this article of the Encyclopædia treats, he thought he could arrange the matter so as to produce a short treatise which might serve as a text-book for one portion of a course of lectures delivered by him in the University of Edinburgh. The present treatise affords examples of the practical considerations by which engineers must be guided in designing bridges and other important structures, and also of the rough-and-ready methods by which experienced men sometimes arrive at a fair degree of knowledge of the probable weight, cost, and general character of a structure without entering into minute particulars or details of the design; and likewise some warnings to young engineers that even experienced men fall into errors of design in combining in the same structure materials which do not possess the same properties when strained by the same degree of force, and especially by the same degree of the force of heat.

In one particular—the abutment ends of cast-iron arched ribs—we consider the instruction as follows to be wrong, viz., "In future designs of ribbed arches it is to be hoped that the practice will be adopted of allowing the rib freedom to turn at the springing. This can be done by ending the rib in a curved bearing." That is not a new suggestion. It was made in the days of James Walker, or, say, of Walker and Burges, and if we had only the rib to consider it would be a good design, but when the spandrels and the roadway are also of cast iron they are more liable to fracture, by unequal loading, when the ends of the ribs are free to move than when they have a broad base, and are fixed; and a fracture is well saved at the expense of some extra metal in the ribs.

The Progress of Civil and Mechanical Engineering and Shipbuilding. Edited by WILLIAM SMITH, C.E., M. Inst. M.E.; JOHN NOBLE, M.E.; and THOMAS SMITH, M.I.N.A. London: Longmans, Green, & Co. 1877. 1st Division. 4to. With Eleven Plates.

IT may be said that about one-third of this division consists of practical information on shipbuilding; that another third consists of various dissertations on railways and on locomotive

engines; and the remainder of short treatises on various subjects. In their prefatory address the authors have a somewhat remarkable passage, as follows:—"Amongst other things that have not reflected any credit upon a branch of our naval architects and designers, past and present, is that coquetting with foreign Governments for employment, and receiving pay, either in meal or in malt, for serving them, under the rose perhaps, but serving them nevertheless; and whenever the opportunity occurs, being willing, nay pressingly urgent, to put themselves forward as the champions of the claims of foreigners (distinguished foreigners, of course), however ill founded, as the originators and designers of anything which has been discovered to possess any practical merit, against the true, well-considered, and honest claims of English, Scotch, and Irish designers or originators."

The authors have treated the progress of engineering and shipbuilding in a somewhat disjointed manner, and neither plates nor woodcuts are well executed (one plate, by the bye, shows the lines of some of the fast-sailing vessels, as the *America* and *Titania*, and of fishing-boats). but the information conveyed is of a practical nature, and the book appears throughout to be honestly written.

Metallic Mining and Collieries, by WARINGTON W. SMYTH, M.A., F.R.S.
Coal. By A. GALLETLY.
Building Stones. By Professor HULL, F.R.S.
Explosive Compounds. By MATTIEU WILLIAMS, F.R.A.S., F.C.S.

THESE form one of the volumes of the series of "British Manufacturing Industries," published by Mr. Stanford, of Charing-cross. Under the head of Metallic Mining, iron occupies the chief place, but there is, it appears, a gold mine in the lower Silurian slaty rock, between Dolgelly and Barmouth, in North Wales. Of silver the British mines yield 200,000*l*. worth in a year, chiefly obtained from the argentiferous galena, or "blue ore" of the lead mines.

Of lead we obtain about 1,250,000*l*. worth in a year.

The mines are (1) those of the limestone formations, generally poor in silver; (2) those of the slaty rocks, often rich in silver; (3) those in granite, variable as to silver, some very rich. A well-marked and productive area is that tract of mountain or carboniferous limestone which constitutes the great bulk of the moorlands in the north of England. In Derbyshire also large quantities of lead have been obtained from the mountain limestone, and in Flintshire and Denbighshire there is a long series of parallel veins which course across the mountain limestone into the millstone grit. Among the lead mines in the slaty rocks are included the great Laxey mines in the Isle of Man. In Shropshire, south of Shrewsbury, there is a series of east and west running veins, several of which are now yielding large amounts of lead ore, as at Snailbeach, Tankerville, and Roman Gravels.

In Cardiganshire, Montgomeryshire, Devon, and Cornwall again, we find lead amongst these slaty rocks.

Copper and tin lie chiefly in Cornwall and Devon, but there is a great falling off in the copper mining industry at present. The author has a very good chapter on the methods of working mines, and on dressing the ore.

Under the head "Coal" we are informed that there are three leading kinds,—(1) Anthracite, which is non-bituminous; (2) Cannel coal, highly bituminous; and (3) household coal, less bituminous. The advantageous working of coal-mines depends greatly upon the manner in which the shafts are sunk. In the days of George Stephenson they were from 7 ft. to 9 ft. in diameter, or rarely perhaps 12 ft.; but now it is usual, when sinking for an extensive coal area, to make the shafts 14 ft., 16 ft., or even 20 ft. in the clear. The other chief operations described by the author are the "tubbing" of the pits to keep the water back, the working of the coal, the underground conveyance, winding up, and ventilation of the workings.

Under the head of "Explosive Compounds" we have, besides gunpowder, picrate of potash, guncotton, Schultz's gunpowder, nitro-glycerine, dynamite, and lithofracteur.

The *fulminates* are explosive substances differing essentially in their chemical composition from those above named.

The author of this paper on explosive compounds is Mr. Mattieu Williams, who taught Orsini how to make the bombs which he used in Paris in 1858, and he now reveals a few facts which have not hitherto been made public. He was introduced to Orsini in 1857, who told him that the search for arms in Italy was so vigorous that ordinary weapons could not be imported or held by the Italian patriots, and that he had invented a new form of gas-burner which could be converted into a bomb by unscrewing the gas nipples and replacing them by gun nipples. This gas-head was to be filled with an explosive composition and used as a hand grenade to be thrown from house-tops and windows amongst the soldiery in the streets; but these gas-burner shells were too small for ordinary gunpowder to produce effective explosion, and Mr. Williams suggested the fulminate of mercury in lieu of powder, made some, and taught Orsini and Pieri how to make it themselves. He believes that Orsini at first really intended these bombs for the purpose named above, and that the idea of removing the French army of occupation from Rome by killing the Emperor in Paris and causing a revolution there was an afterthought, or a suggestion of Pieri, "a crafty, sinister man, likely to choose a crooked course of action"; but he describes Orsini as a highly-educated, refined, and courteous gentleman. It is, however, in this, as in every other like case, a prostitution of intellect to "suggest" improvements in, or in any way to help, the killing of people in the manner intended by the use of these infernal Orsini bombs.

But Mr. Mattieu Williams has not been alone in this kind of work; he may indeed have thought he was working in good company, seeing how some other gentlemen occupy their time in inventing means of killing by surprise. Surely such means of warfare are beyond the scope of mind of gentlemen, and tend, not towards a true civilisation, but to bring us back to a state of barbarism.

A Practical Treatise on Heat, for the Use of Engineers, Architects, &c. By THOMAS BOX. Second edition. London and New York. E. & F. N. Spon. 1876.

THIS is essentially a practical treatise, and will enable many more persons to study with useful effect the phenomena and action of heat than could have done so before. It must have been written with a determination to avoid display of mathematics, and rather to state the cases as plainly as possible for the benefit of all readers. The researches of the author have been far and wide, and in this second edition much new information has been given on evaporation, heating liquids and air, and on ventilation.

After the general principles and data of the subject follow chapters on combustion, steam-boilers, and the efflux of air; on chimneys, vapours, evaporation, distillation, drying, heating liquids, heating air, the transmission of heat and the laws of cooling; on ventilation, examples of buildings heated and ventilated, on wind and its effect on ventilation, &c.; to which are added the explosive forces of gases, evaporation at low pressures of air, and the absorption of gases by liquids. The book contains more than a hundred tables and fourteen plates.

The Timber Supply Question of the Dominion of Canada and of the United States of America. By JAMES LITTLE. Montreal: Lovell Printing and Publishing Company. 1876.

THE author accuses the Crown Timber Offices, of both Ontario and Quebec, of stripping the country of its white pine (our yellow pine) and throwing it on the market year after year without any reference whatever to the requirements of the trade, their sole object appearing to be to compete with each other which can raise the largest amount of revenue, and make the best exhibit in their budget speeches, and that consequently great and shameful waste of this material has ensued; and the States are following the same course. The lumber-men's axes are said to be, in the region near Otsego Lake, employed so that their ring may be heard from shanty to shanty and across the watershed, showing how near they have reached the end of their supplies.

The Industrial Classes, and Industrial Statistics. By G. PHILLIPS BEVAN, F.G.S., being one of a series of volumes of "British Manufacturing Industries." London: Edward Stanford. 1876.

THE sources from which this industrious author has in the main derived his information are the census tables of 1871, and the factory returns of the same year, but he has, in some cases, been able to add to these from private sources. Broadly stated, the information consists of the number of persons employed, the wages they earn, and what they produce, under the general heads of Mining, Metals, Ceramics, Glass, and Paper. The seats of the various industries in the country are shown upon two maps which accompany the volume. The book will interest many.

VARIORUM.

THE 60th edition of "Laxton's Builders' Price Book" has been published. A correspondent writes:—"I wish to call your attention to 'Laxton's carefully revised and corrected Builders' Price Book,' viz., 1874, page 333; five hours at 4½d. 6*l*. 1s. 10½d.; ditto, 1875, ditto, 1877, page 345. Such mistakes are serious, if we are to rely on a careful and corrected list." True enough, there is that error, but it is not very serious; it merely means that a 6, instead of a 0, has crept in under the £, and if there be nothing worse to be said against the book, we will still give it our recommendation.——A want of a portable copy of the Metropolitan Building Act has been felt, editions being out of print. This want is now supplied by a new issue of "Woolrych's Metropolitan Building Act," edited by Mr. Noel H. Paterson, Barrister-at-Law (Stevens & Son, Chancery-lane). The notes and cases referred to are valuable.——"May's British and Irish Press Guide" now includes, advantageously, a list of Continental journals. We condense from the last issue of the "Guide" some interesting particulars, giving an idea of the present position of the newspaper and periodical press of the United Kingdom. There are now issued 1,783 newspapers, thus distributed: Metropolis, 460; England, 946; Wales, 50; Scotland, 164; Ireland, 142; British Isles, 21. Among these are 87 morning and 42 evening journals, but the majority are published weekly, Friday claiming 363, and Saturday 675 examples. Of 114 monthly newspapers (principally trade organs), 100 appear in London. Only one newspaper, the *Observer*, appears on Sunday alone, the remaining journals recognised as Sunday papers (all published in the metropolis) issuing editions on preceding days also. The publishing prices range from one half-penny to two shillings per copy, there being 101 at the former, and four at the latter price. The penny newspapers number 914, far exceeding all others; the next highest being those at twopence,—263. There are 92 sixpenny and 20 shilling journals, and 14 are gratuitously distributed. The periodicals, magazines, &c., number 779 examples, of which 579 are published in London.

Completion of the North Malvern Reservoir.—The site of the reservoir is one fixed upon by the Board as far back as 1872, when they approved of plans prepared by the then local surveyor for a reservoir, which, however, from faulty design and other causes, after several mishaps, finally fell in on the night of Sunday, the 24th August, 1873, after a very heavy storm. Mr. Hawksley was then called in to report upon the reservoir and the cause of the accident, which he accordingly did, and at the request of the Board he made a careful examination with a view to seeing whether the structure could be repaired, but considering the special purposes for which the work was intended, he had to inform the Board that it would be absolutely necessary to take down and re-erect the entire building, and Mr. Hawksley was requested to prepare plans for the reconstruction of the reservoir of the largest size suitable to the site. This he accordingly did, and in November, 1875, a contract was entered into with Messrs. Wood & Sons, of Worcester, to carry out the work for the sum of 4,975*l*. This has been brought to a successful termination. The internal dimensions of the reservoir are 99 ft. by 85 ft., and 19 ft. to the top water-line, and it will contain nearly one million gallons of water. The side walls are formed into bays and carried to the height of about 15 ft., and over each bay a half-domical roof is constructed. There are five rows of piers of great strength, from which semi-circular arches spring, forming corridors or passages from one end of the reservoir to the other. The walls, piers, arches, and the half-domical roofs are arranged in alternate courses of black and red bricks which have a very good effect. Mr. Bishop was clerk of the works for the Local Board, and Mr. Bilborough, foreman for Messrs. Wood & Sons, the contractors.

COMPETITIONS.

Leys School, Cambridge.—In a limited competition, confined to three London and four provincial architects, for a dining-hall, chapel, and six lodging-houses in connexion with the "Leys School, Cambridge," the award has been given to Mr. Robert Curwen, jun., of Liverpool, the adjudicator being Mr. Alfred Waterhouse.

Sunderland New Museum and Library.—At a meeting of the Sunderland Town Council, on the 14th inst., the Museum and Library Committee presented a report recommending that the plans of Messrs J. and T. Tillman, marked "Alpha," be awarded the prize of fifty guineas; and that the committee be authorised to make arrangements with Messrs. Tillman for the carrying out of the works and to advertise for tenders. The report was adopted.

CHURCH-BUILDING NEWS.

Aberlour.—St. Margaret's Episcopal Church, Aberlour, was consecrated on the 8th ult. The cost of the church when completed will be between 5,000*l.* and 6,000*l.* The works at present finished will cost 2,500*l.* The church, which is in the Early Decorated style, with details of Early French character, is situated immediately to the east of the village of Charlestown. At present it is but partly finished. The original design contemplates the erection of a nave 60 ft. long and a chancel of 40 ft., with a massive tower and spire at the south-west corner of the nave, the organ-chamber and vestry being placed on the north side of the chancel. The portion of the building consecrated is 60 ft. long by 36 ft. wide, and consists of a nave of five bays with narrow aisles on either side. The arches of the nave of the church are supported on massive columns of red polished Peterhead granite, with freestone bases, capitals, and arches. Over these arches are clearstory windows in triplets. The walls of the building outside and inside are of warm, flesh-coloured granite, neatly pointed and relieved with white freestone finishings. The roof of the building is of red pine, and is divided by massive principal couples, resting on stone corbels placed on each pier of the nave, the whole being dressed and richly moulded. The buildings are from the designs of Mr. A. Ross, architect, Inverness. The contractors are Messrs. Reid & Paterson, masons, Inverness; Mr. Macbeth, carpenter, Elgin; Mr. Patillo, slater, Inverness; Mr. Thomson, plumber, Inverness; and Mr. Munro, plasterer, Aberlour. Mr. Wm. Alexander is clerk of works.

Sevenoaks.—On the 17th ult. a meeting was held in the vestry-room of the parish church, Sevenoaks, for the purpose of confirming the following resolution, passed at a meeting of the church restoration sub-committee:—"That the removal of the galleries and organ, and re-seating the church (a bed of concrete having been placed above the vaults), be carried out at once." The following resolution was passed:—"That the resolution of the committee for the consideration and carrying into effect the repairs and restoration of the church, passed at the meeting held on the 21st of October last, be confirmed, and that the sub-committee be authorised to proceed to carry out the alterations and repairs, or any portion of them, in accordance with the plans prepared by Mr. Christian for the purpose." The application for the faculty, which was read, set forth the whole of the work suggested by Mr. Christian, the architect, at a cost of about 7,000*l.*

Sibstone.—Sibstone Church, which has been remodelled from the designs by Mr. Alfred Bickerdike, has been reopened by the Bishop of Peterborough. The nave is a comparatively modern structure, the ceiling of plaster has been removed, exposing a good oak roof. The chancel has been refitted, and an organ gallery removed from the west end of the nave, the organ being placed in the chancel. The whole interior is being decorated from designs by the architect.

A Centenarian Brickmaker.—The *Darlington and Stockton Times* records that on the 7th inst. several gentlemen paid a visit to the brickworks of Mr. John Hutton, Hob Hill, Saltburn, for the purpose of witnessing a centenarian at work on his 102nd birthday. The man, whose name is James Norris, was born at Corsham, in Wiltshire. He managed to load and wheel a barrow with twenty-three unbaked bricks, the weight of which, without barrow, was 200 lb.

STAINED GLASS.

Campden.—A window to the memory of the late Vicar of Campden, the Rev. C. E. Kennaway, Canon of Gloucester, has been placed in the west end of the parish church. The subject of the window is Jacob's dream. The work has been executed by Messrs. Powell & Son. The cost has been about 300*l.*

Durham.—With the view of filling with painted glass the windows of the chapel of the Nine Altars, in Durham Cathedral, which still remain unpainted, a subscription list has been entered into. The Duke of Northumberland heads the list with 200*l.*

Cheltenham.—Another memorial window, making the fourth erected within the past twelve months, has just been placed in the chancel of the parish church. It has been erected in memory of the late Miss Baron, and the subjects chosen represent the feeding of the hungry, clothing the naked, relieving the poor, and comforting the afflicted. The window is by Walles, of Newcastle.

Heptonstall.—A stained glass window has been inserted on the south side of St. Thomas's church, and adjoining that which was put in a few years ago by Mr. Foster, of Carr, in Erringden. The subject is "Christ in the Temple."

Newcastle-on-Tyne.—The memorial window to the late vicar of Newcastle (the Rev. Clement Moody, M.A) has been fixed in St. Nicholas's Church. It forms the principal window in the south transept, and is executed in coloured figures on a white ground, exhibiting to some extent a reproduction of the fifteenth-century style. In the five lower compartments the subject is Christ weeping over Jerusalem, and the five upper compartments represent Christ's Sermon on the Mount. Tracery compartments contain the figures of the four greater prophets—Isaiah, Jeremiah, Ezekiel, and Daniel; and of the four lesser—Hosea, Joel, Amos, and Obadiah. About 500*l.* have been subscribed towards this memorial. The window has been executed by Messrs. Powell Brothers, of Leeds.

York.—A new stained-glass window, erected at the expense of Mr. W. B. Richardson, of York, solicitor, has just been placed in the Guildhall, in remembrance of his father, Mr. W. Richardson, who for a great many years was honourably associated with the York Corporation. The subject chosen by Mr. Richardson was King Charles I. declaring to the peers and privy councillors assembled at York that he required no obedience contrary to the known law of the land, the window being the twelfth in order, or the second light to the right on entering the Guildhall. Capronnier, of Brussels, was commissioned to produce the memorial. This painter has now three examples in the city of York, namely, the window under notice, the window at the opposite side of the hall—"The Barons of the North swearing to defend York against the Scots," and the east window at St. Clement's Church. Mr. Butler, of York, had the charge of putting in the window; and Mr. J. Keswick, of Micklegate, executed the necessary masonry work. The window was designed by Mr. J. E. Doyle, of London, the author of the "Chronicles of England."

Miscellanea.

Exhibition of Sanitary Appliances at Manchester.—The Manchester and Salford Sanitary Association purpose establishing an Exhibition of Sanitary Appliances at Manchester during the visit of the British Medical Association in August next. It is to be hoped that everyone possessing a model of any new sanitary invention or improvement will offer to deposit it in the Exhibition. The exhibitions of this kind which have been organised in various places by the Social Science Association have done much good. We trust that the present proposed Exhibition will be equally successful. The committee hope to be able to secure a site adjoining Owens College. The secretary, Mr. Frederick Scott, 78, Cross-street, Manchester, will give any information that may be desired.

The Richmond Surveyorship.—At an adjourned special meeting of the Richmond Select Vestry on the 10th inst., the selected candidates for the surveyorship, named in our last (p. 276), attended. Mr. Brunton, engineer and surveyor to the city of Durham, was the successful candidate. He is to have a salary of 250*l.* per annum.

Japanese Porcelain.—A report upon the porcelain minerals from Japan, exhibited at the recent Centennial Exhibition, has, says the *Mining Journal*, been made by Dr. H. Wurtz, of Hoboken, assisted as to the microscopic observations and literature of the subject by Mr. A. A. Julien, of the Columbia College School of Mines, New York. In connexion with the resources of Japan, Professor Munroe, of the Tokio Kaisei-Gakko, remarks that the mineral wealth of Japan lies not, as was formerly supposed, in inexhaustible deposits of the precious metals, but chiefly in its abundant stores of coal and iron. Next in importance, perhaps, to coal and iron are the porcelain clays, which form the basis of a very considerable industry. Minerals used for pottery of all kinds are very abundant in Japan. This is the case in a most remarkable degree in the neighbourhood of Arita, in the province of Hizen, which is the centre of the porcelain manufacture. The raw material is always powdered by means of balancing pounders of peculiar construction. No machinery equivalent to the quartz or glaze mills of foreign countries is used, so that all that cannot be pounded sufficiently fine by the process mentioned (often 40 to 50 per cent.) is thrown aside as waste. Long experience, combined with the good quality of the raw material, enables the manufacturers to prepare a clay fit even for the production of very large pieces, such as vases from 6 ft. to 7 ft. in height. The throwing and shaping of the clay is done upon the common potter's wheel, by means of which the workmen of Arita turn out large dishes of 3 ft. diameter, as well as the so-called egg-shell porcelain, not thicker than paper. When the pieces have been sufficiently dried in the open air, they are shaped with sharp iron tools on the same lathe on which the first throwing has been done, and are then coated with a very pure white clay, so as to give the finished ware a better appearance, and to bring out with more intensity the fine blue colour of the cobalt painting.

The Mounds in Hyde Park.—In the House of Commons, on the 8th inst., Mr. Monk asked whether any estimate had been laid before the House of the expense of removing the mounds in Hyde Park, and whether the First Commissioner of Works would give an undertaking that no more public money would be expended in their removal until the House had had an opportunity of considering the matter? Mr. Noel replied that no vote had been proposed on the subject, and he was in great hopes that by judicious economy those mounds might be removed without the necessity of proposing a vote to the House. Mr. Monk gave notice that on the earliest opportunity he would move a resolution that it was undesirable that any further expenditure should be incurred with respect to those mounds.

Fifteen Hundred Years of Sleep.—"The mines of Laurium, which gave rise recently to lively diplomatic discussion, are generally known to be largely encumbered with scoriæ, proceeding from the working of the ancient Greeks, but still containing enough of silver to repay extraction by the improved modern methods. Professor Hendriech relates, according to *L'Union Medicale*, that under these scoriæ, for at least 1,500 years, has slept the seed of a poppy of the species Glaucium. After the refuse had been removed to the furnaces, from the whole space which they had covered have sprung up and flowered the pretty yellow corollas of this flower, which was unknown to modern science, but is described in Pliny and Dioscorides. The flower had disappeared for from fifteen to twenty centuries, and its reproduction at this interval is a fact parallel to the fertility of the famous mummy wheat."

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engines; and the remainder of short treatises on various subjects. In their prefatory address the authors have a somewhat remarkable passage, as follows:—"Amongst other things that have not reflected any credit upon a branch of our naval architects and designers, past and present, is that coquetting with foreign Governments for employment, and receiving pay, either in meal or in malt, for serving them, under the rose perhaps, but serving them nevertheless; and whenever the opportunity occurs, being willing, nay pressingly urgent, to put themselves forward as the champions of the claims of foreigners (distinguished foreigners, of course), however ill founded, as the originators and designers of anything which has been discovered to possess any practical merit, against the true, well-considered, and honest claims of English, Scotch, and Irish designers or originators."

The authors have treated the progress of engineering and shipbuilding in a somewhat disjointed manner, and neither plates nor woodcuts are well executed (one plate, by the bye, shows the lines of some of the fast-sailing vessels, as the *America* and *Titania*, and of fishing-boats), but the information conveyed is of a practical nature, and the book appears throughout to be honestly written.

Metallic Mining and Collieries, by WARINGTON W. SMYTH, M.A., F.R.S.
Coal. By A. GALLETLY.
Building Stones. By Professor HULL, F.R.S.
Explosive Compounds. By MATTIEU WILLIAMS, F.R.A.S., F.C.S.

THESE form one of the volumes of the series of "British Manufacturing Industries," published by Mr. Stanford, of Charing-cross. Under the head of Metallic Mining, iron occupies the chief place, but there is, it appears, a gold mine in the lower Silurian slaty rock, between Dolgelly and Barmouth, in North Wales. Of silver the British mines yield 200,000*l*. worth in a year, chiefly obtained from the argentiferous galena, or "blue ore" of the lead mines.

Of lead we obtain about 1,250,000*l*. worth in a year.

The mines are (1) those of the limestone formations, generally poor in silver; (2) those of the slaty rocks, often rich in silver; (3) those in granite, variable as to silver, some very rich. A well-marked and productive area is that tract of mountain or carboniferous limestone which constitutes the great bulk of the moorlands in the north of England. In Derbyshire also large quantities of lead have been obtained from the mountain limestone, and in Flintshire and Denbighshire there is a long series of parallel veins which course across the mountain limestone into the millstone grit. Among the lead mines in the slaty rocks are included the great Laxey mines in the Isle of Man. In Shropshire, south of Shrewsbury, there is a series of east and west running veins, several of which are now yielding large amounts of lead ore, as at Snailbeach, Tankerville, and Roman Gravels.

In Cardiganshire, Montgomeryshire, Devon, and Cornwall again, we find lead amongst these slaty rocks.

Copper and tin lie chiefly in Cornwall and Devon, but there is a great falling off in the copper mining industry at present. The author has a very good chapter on the methods of working mines, and on dressing the ore.

Under the head "Coal" we are informed that there are three leading kinds,—(1) Anthracite, which is non-bituminous; (2) Cannel coal, highly bituminous; and (3) household coal, less bituminous. The advantageous working of coal-mines depends greatly upon the manner in which the shafts are sunk. In the days of George Stephenson they were from 7 ft. to 9 ft. in diameter, or rarely perhaps 12 ft.; but now it is usual, when sinking for an extensive coal area, to make the shafts 14 ft., 16 ft., or even 20 ft. in the clear. The other chief operations described by the author are the "tubbing" of the pits to keep the water back, the working of the coal, the underground conveyance, winding up, and ventilation of the workings.

Under the head of "Explosive Compounds" we have, besides gunpowder, picrate of potash, guncotton, Schultz's gunpowder, nitro-glycerine, dynamite, and lithofracteur.

The *fulminates* are explosive substances differing essentially in their chemical composition from those above named.

The author of this paper on explosive compounds is Mr. Mattieu Williams, who taught Orsini how to make the bombs which he used in Paris in 1858, and he now reveals a few facts which have not hitherto been made public. He was introduced to Orsini in 1857, who told him that the search for arms in Italy was so vigorous that ordinary weapons could not be imported or held by the Italian patriots, and that he had invented a new form of gas-burner which could be converted into a bomb by unscrewing the gas nipples and replacing them by gun nipples. This gas-head was to be filled with an explosive composition and used as a hand grenade to be thrown from house-tops and windows amongst the soldiery in the streets; but these gas-burner shells were too small for ordinary gunpowder to produce effective explosion, and Mr. Williams suggested the fulminate of mercury in lieu of powder, made some, and taught Orsini and Pieri how to make it themselves. He believes that Orsini at first really intended these bombs for the purpose named above, and that the idea of removing the French army of occupation from Rome by killing the Emperor in Paris and causing a revolution there was an afterthought, or a suggestion of Pieri, "a crafty, sinister man, likely to choose a crooked course of action"; but he describes Orsini as a highly-educated, refined, and courteous gentleman. It is, however, in this, as in every other like case, a prostitution of intellect to "suggest" improvements in, or in any way to help, the killing of people in the manner intended by the use of these infernal Orsini bombs.

But Mr. Mattieu Williams has not been alone in this kind of work; he may indeed have thought he was working in good company, seeing how some other gentlemen occupy their time in inventing means of killing by surprise. Surely such means of warfare are beyond the scope of mind of gentlemen, and tend, not towards a true civilisation, but to bring us back to a state of barbarism.

A Practical Treatise on Heat, for the Use of Engineers, Architects, &c. By THOMAS BOX. Second edition. London and New York. E. & F. N. Spon. 1876.

THIS is essentially a practical treatise, and will enable many more persons to study with useful effect the phenomena and action of heat than could have done so before. It must have been written with a determination to avoid display of mathematics, and rather to state the cases as plainly as possible for the benefit of all readers. The researches of the author have been far and wide, and in this second edition much new information has been given on evaporation, heating liquids and air, and on ventilation.

After the general principles and data of the subject follow chapters on combustion, steam-boilers, and the efflux of air; on chimneys, vapours, evaporation, distillation, drying, heating liquids, heating air, the transmission of heat and the laws of cooling; on ventilation, examples of buildings heated and ventilated, on wind and its effect on ventilation, &c.; to which are added the explosive forces of gases, evaporation at low pressures of air, and the absorption of gases by liquids. The book contains more than a hundred tables and fourteen plates.

The Timber Supply Question of the Dominion of Canada and of the United States of America. By JAMES LITTLE. Montreal: Lovell Printing and Publishing Company. 1876.

THE author accuses the Crown Timber Offices, of both Ontario and Quebec, of stripping the country of its white pine (our yellow pine) and throwing it on the market year after year without any reference whatever to the requirements of the trade, their sole object appearing to be to compete with each other which can raise the largest amount of revenue, and make the best exhibit in their budget speeches, and that consequently great and shameful waste of this material has ensued; and the States are following the same course. The lumber-men's axes are said to be, in the region near Otsego Lake, employed so that their ring may be heard from shanty to shanty and across the watershed, showing how near they have reached the end of their supplies.

The Industrial Classes, and Industrial Statistics. By G. PHILLIPS BEVAN, F.G.S., being one of a series of volumes of "British Manufacturing Industries." London: Edward Stanford. 1876.

THE sources from which this industrious author has in the main derived his information are the census tables of 1871, and the factory returns of the same year, but he has, in some cases, been able to add to these from private sources. Broadly stated, the information consists of the number of persons employed, the wages they earn, and what they produce, under the general heads of Mining, Metals, Ceramics, Glass, and Paper. The seats of the various industries in the country are shown upon two maps which accompany the volume. The book will interest many.

VARIORUM.

THE 60th edition of "Laxton's Builders' Price Book" has been published. A correspondent writes:—"I wish to call your attention to 'Laxton's carefully revised and corrected Builders' Price Book,' viz., 1874, page 333; five hours at 4½*d*. 6*l*. 1*s*. 10½*d*.; ditto, 1875, ditto, 1877, page 345. Such mistakes are serious, if we are to rely on a careful and corrected list." True enough, there is that error, but it is not very serious; it merely means that a 6, instead of a 0, has crept in under the £, and if there be nothing worse to be said against the book, we will still give it our recommendation.——A want of a portable copy of the Metropolitan Building Act has been felt, editions being out of print. This want is now supplied by a new issue of "Woolrych's Metropolitan Building Act," edited by Mr. Noel H. Paterson, Barrister-at-Law (Stevens & Son, Chancery-lane). The notes and cases referred to are valuable.——"May's British and Irish Press Guide" now includes, advantageously, a list of Continental journals. We condense from the last issue of the "Guide" some interesting particulars, giving an idea of the present position of the newspaper and periodical press of the United Kingdom. There are now issued 1,783 newspapers, thus distributed: Metropolis, 460; England, 946; Wales, 50; Scotland, 164; Ireland, 142; British Isles, 21. Among these are 87 morning and 42 evening journals, but the majority are published weekly, Friday claiming 363, and Saturday 675 examples. Of 114 monthly newspapers (principally trade organs), 100 appear in London. Only one newspaper, the *Observer*, appears on Sunday alone, the remaining journals recognised as Sunday papers (all published in the metropolis) issuing editions on preceding days also. The publishing prices range from one half-penny to two shillings per copy, there being 101 at the former, and four at the latter price. The penny newspapers number 914, far exceeding all others; the next highest being those at twopence,—263. There are 92 sixpenny and 20 shilling journals, and 14 are gratuitously distributed. The periodicals, magazines, &c., number 779 examples, of which 579 are published in London.

Completion of the North Malvern Reservoir.—The site of the reservoir is one fixed upon by the Board as far back as 1872, when they approved of plans prepared by the then local surveyor for a reservoir, which, however, from faulty design and other causes, after several mishaps, finally fell in on the night of Sunday, the 24th August, 1873, after a very heavy storm. Mr. Hawksley was then called in to report upon the reservoir and the cause of the accident, which he accordingly did, and at the request of the Board he made a careful examination with a view to seeing whether the structure could be repaired, but considering the special purposes for which the work was intended, he had to inform the Board that it would be absolutely necessary to take down and re-erect the entire building, and Mr. Hawksley was requested to prepare plans for the reconstruction of the reservoir of the largest size suitable to the site. This he accordingly did, and in November, 1875, a contract was entered into with Messrs. Wood & Sons, of Worcester, to carry out the work for the sum of 4,975*l*. This has been brought to a successful termination. The internal dimensions of the reservoir are 99 ft. by 85 ft., and 19 ft. to the top water-line, and it will contain nearly one million gallons of water. The side walls are formed into bays and carried to the height of about 15 ft., and over each bay a half-domical roof is constructed. There are five rows of piers of great strength, from which semi-circular arches spring, forming corridors or passages from one end of the reservoir to the other. The walls, piers, arches, and the half-domical roofs are arranged in alternate courses of black and red bricks which have a very good effect. Mr. Bishop was clerk of the works for the Local Board, and Mr. Bilborough, foreman for Messrs. Wood & Sons, the contractors.

COMPETITIONS.

Leys School, Cambridge.—In a limited competition, confined to three London and four provincial architects, for a dining-hall, chapel, and six lodging-houses in connexion with the "Leys School, Cambridge," the award has been given to Mr. Robert Curwen, jun., of Liverpool, the adjudicator being Mr. Alfred Waterhouse.

Sunderland New Museum and Library.—At a meeting of the Sunderland Town Council, on the 14th inst., the Museum and Library Committee presented a report recommending that the plans of Messrs J. and T. Tillman, marked "Alpha," be awarded the prize of fifty guineas; and that the committee be authorised to make arrangements with Messrs. Tillman for the carrying out of the works and to advertise for tenders. The report was adopted.

CHURCH-BUILDING NEWS.

Aberlour.—St. Margaret's Episcopal Church, Aberlour, was consecrated on the 8th ult. The cost of the church when completed will be between 5,000*l.* and 6,000*l.* The works at present finished will cost 2,500*l.* The church, which is in the Early Decorated style, with details of Early French character, is situated immediately to the east of the village of Charlestown. At present it is but partly finished. The original design contemplates the erection of a nave 60 ft. long and a chancel of 40 ft., with a massive tower and spire at the south-west corner of the nave, the organ-chamber and vestry being placed on the north side of the chancel. The portion of the building consecrated is 60 ft. long by 36 ft. wide, and consists of a nave of five bays with narrow aisles on either side. The arches of the nave of the church are supported on massive columns of red polished Peterhead granite, with freestone bases, capitals, and arches. Over these arches are clearstory windows in triplets. The walls of the building outside and inside are of warm, flesh-coloured granite, neatly pointed and relieved with white freestone finishings. The roof of the building is of red pine, and is divided by massive principal couples, resting on stone corbels placed on each pier of the nave, the whole being dressed and richly moulded. The buildings are from the designs of Mr. A. Ross, architect, Inverness. The contractors are Messrs. Reid & Paterson, masons, Inverness; Mr. Macbeth, carpenter, Elgin; Mr. Patillo, slater, Inverness; Mr. Thomson, plumber, Inverness; and Mr. Munro, plasterer, Aberlour. Mr. Wm. Alexander is clerk of works.

Sevenoaks.—On the 17th ult. a meeting was held in the vestry-room of the parish church, Sevenoaks, for the purpose of confirming the following resolution, passed at a meeting of the church restoration sub-committee:—"That the removal of the galleries and organ, and re-seating the church (a bed of concrete having been placed above the vaults), be carried out at once." The following resolution was passed:—"That the resolution of the committee for the consideration and carrying into effect the repairs and restoration of the church, passed at the meeting held on the 21st of October last, be confirmed, and that the sub-committee be authorised to proceed to carry out the alterations and repairs, or any portion of them, in accordance with the plans prepared by Mr. Christian for the purpose." The application for the faculty, which was read, set forth the whole of the work suggested by Mr. Christian, the architect, at a cost of about 7,000*l.*

Sibstone.—Sibstone Church, which has been remodelled from the designs by Mr. Alfred Bickerdike, has been reopened by the Bishop of Peterborough. The nave is a comparatively modern structure, the ceiling of plaster has been removed, exposing a good oak roof. The chancel has been refitted, and an organ gallery removed from the west end of the nave, the organ being placed in the chancel. The whole interior is being decorated from designs by the architect.

A Centenarian Brickmaker.—The *Darlington and Stockton Times* records that on the 7th inst. several gentlemen paid a visit to the brickworks of Mr. John Hutton, Hob Hill, Saltburn, for the purpose of witnessing a centenarian at work on his 102nd birthday. The man, whose name is James Norris, was born at Corsham, in Wiltshire. He managed to load and wheel a barrow with twenty-three unbaked bricks, the weight of which, without barrow, was 200 lb.

STAINED GLASS.

Campden.—A window to the memory of the late Vicar of Campden, the Rev. C. E. Kennaway, Canon of Gloucester, has been placed in the west end of the parish church. The subject of the window is Jacob's dream. The work has been executed by Messrs. Powell & Son. The cost has been about 300*l.*

Durham.—With the view of filling with painted glass the windows of the chapel of the Nine Altars, in Durham Cathedral, which still remain unpainted, a subscription list has been entered into. The Duke of Northumberland heads the list with 200*l.*

Cheltenham.—Another memorial window, making the fourth erected within the past twelve months, has just been placed in the chancel of the parish church. It has been erected in memory of the late Miss Baron, and the subjects chosen represent the feeding of the hungry, clothing the naked, relieving the poor, and comforting the afflicted. The window is by Walles, of Newcastle.

Heptonstall.—A stained glass window has been inserted on the south side of St. Thomas's church, and adjoining that which was put in a few years ago by Mr. Foster, of Carr, in Erringden. The subject is "Christ in the Temple."

Newcastle-on-Tyne.—The memorial window to the late vicar of Newcastle (the Rev. Clement Moody, M.A) has been fixed in St. Nicholas's Church. It forms the principal window in the south transept, and is executed in coloured figures on a white ground, exhibiting to some extent a reproduction of the fifteenth-century style. In the five lower compartments the subject is Christ weeping over Jerusalem, and the five upper compartments represent Christ's Sermon on the Mount. Tracery compartments contain the figures of the four greater prophets—Isaiah, Jeremiah, Ezekiel, and Daniel; and of the four lesser—Hosea, Joel, Amos, and Obadiah. About 500*l.* have been subscribed towards this memorial. The window has been executed by Messrs. Powell Brothers, of Leeds.

York.—A new stained-glass window, erected at the expense of Mr. W. B. Richardson, of York, solicitor, has just been placed in the Guildhall, in remembrance of his father, Mr. W. Richardson, who for a great many years was honourably associated with the York Corporation. The subject chosen by Mr. Richardson was King Charles I. declaring to the peers and privy councillors assembled at York that he required no obedience contrary to the known law of the land, the window being the twelfth in order, or the second light to the right on entering the Guildhall. Capronnier, of Brussels, was commissioned to produce the memorial. This painter has now three examples in the city of York, namely, the window under notice, the window at the opposite side of the hall—"The Barons of the North swearing to defend York against the Scots," and the east window at St. Clement's Church. Mr. Butler, of York, had the charge of putting in the window; and Mr. J. Keswick, of Micklegate, executed the necessary masonry work. The window was designed by Mr. J. E. Doyle, of London, the author of the "Chronicles of England."

Miscellanea.

Exhibition of Sanitary Appliances at Manchester.—The Manchester and Salford Sanitary Association purpose establishing an Exhibition of Sanitary Appliances at Manchester during the visit of the British Medical Association in August next. It is to be hoped that everyone possessing a model of any new sanitary invention or improvement will offer to deposit it in the Exhibition. The exhibitions of this kind which have been organised in various places by the Social Science Association have done much good. We trust that the present proposed Exhibition will be equally successful. The committee hope to be able to secure a site adjoining Owens College. The secretary, Mr. Frederick Scott, 78, Cross-street, Manchester, will give any information that may be desired.

The Richmond Surveyorship.—At an adjourned special meeting of the Richmond Select Vestry on the 10th inst., the selected candidates for the surveyorship, named in our last (p. 276), attended. Mr. Brunton, engineer and surveyor to the city of Durham, was the successful candidate. He is to have a salary of 250*l.* per annum.

Japanese Porcelain.—A report upon the porcelain minerals from Japan, exhibited at the recent Centennial Exhibition, has, says the *Mining Journal*, been made by Dr. H. Wurtz, of Hoboken, assisted as to the microscopic observations and literature of the subject by Mr. A. A. Julien, of the Columbia College School of Mines, New York. In connexion with the resources of Japan, Professor Munroe, of the Tokio Kaisei-Gakko, remarks that the mineral wealth of Japan lies not, as was formerly supposed, in inexhaustible deposits of the precious metals, but chiefly in its abundant stores of coal and iron. Next in importance, perhaps, to coal and iron are the porcelain clays, which form the basis of a very considerable industry. Minerals used for pottery of all kinds are very abundant in Japan. This is the case in a most remarkable degree in the neighbourhood of Arita, in the province of Hizen, which is the centre of the porcelain manufacture. The raw material is always powdered by means of balancing pounders of peculiar construction. No machinery equivalent to the quartz or glaze mills of foreign countries is used, so that all that cannot be pounded sufficiently fine by the process mentioned (often 40 to 50 per cent.) is thrown aside as waste. Long experience, combined with the good quality of the raw material, enables the manufacturers to prepare a clay fit even for the production of very large pieces, such as vases from 6 ft. to 7 ft. in height. The throwing and shaping of the clay is done upon the common potter's wheel, by means of which the workmen of Arita turn out large dishes of 3 ft. diameter, as well as the so-called egg-shell porcelain, not thicker than paper. When the pieces have been sufficiently dried in the open air, they are shaped with sharp iron tools on the same lathe on which the first throwing has been done, and are then coated with a very pure white clay, so as to give the finished ware a better appearance, and to bring out with more intensity the fine blue colour of the cobalt painting.

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The Knightsbridge Barracks.—In reply to Mr. Baillie Cochrane, who asked the Secretary of State for War whether the Government would not reconsider the question of the site for the new barracks, the opportunity of improving Knightsbridge, and of making a suitable approach to Hyde Park-corner, Mr. Stanley said the contract for the erection of the whole of the buildings was entered into on the 20th of February, 1877, and the works have been already commenced. They are designed so as to occupy the ground, exclusive of the narrow strip which is to be given up for the improvement of the roadway, under agreement with the Metropolitan Board of Works. The scheme will not be reconsidered.

Drainage.—In the House of Lords, the Duke of Richmond and Gordon gave notice on this Friday he would move for a Select Committee to inquire into the operation of existing statutes in regard to the formation of and proceedings by the Commissioners of Sewers, Drainage, and River Navigation Boards; to consider by what means such bodies may be more conveniently and inexpensively constituted, their procedure improved, and their powers enlarged, so as to provide more efficiently for storage of water, the prevention of floods, and the discharge of other functions appertaining to Conservancy Boards.

Loans to Sanitary Authorities.—In the House of Commons, on the 9th inst., Mr. Sclater-Booth, answering a question put by Mr. Whitbread, said that the last published returns, those for 1875, showed that the sanction of the Local Government Board had been given to loans amounting to 1,835,797*l.* to urban sanitary authorities. During the year 1876 sanction had been given to urban sanitary authorities for the borrowing of 2,506,459*l.*, showing an increase of 670,662*l.* In the case of the rural sanitary authorities, the amount by the last return was 137,808*l.*, and sanction was given during 1876 to 200,692*l.*, showing an increase of 62,884*l.*

Startforth.—The contracts for the erection of the Board school, or, more properly speaking, the Morritt Memorial School, for the united districts of Startforth and Boldron, near Barnard Castle, have been let to Mr. Borrowdale, of Darlington, builder, and Mr. T. Borrowdale, joiner, Barnard Castle. The outlay, which will be defrayed by a fund vested in the trustees under the will of the late Mrs. Morritt, widow of Mr. W. J. S. Morritt, of Rokeby Park, will exceed 2,000*l.*

The Natural History Museum.—In the House of Commons, on the 9th instant., Mr. Gerard Noel, in answer to Lord A. Russell, stated that the new building of the Museum of Natural History at South Kensington would be completed in the early part of next year, and it was hoped that by the autumn of next year the museum would be ready for the reception of the collections now in the British Museum.

The New Law Courts.—According to the *City Press*, the Government have decided to purchase the blocks of houses between Bell-yard and Chancery-lane, including the Old Cock Tavern, so far as the Law Fire Office, for the purposes of the New Law Courts, and to widen Fleet-street by 12 ft. Temple Bar is to be removed at once, and Messrs. Child & Co. will rebuild their banking establishment on an extensive scale.

Maidstone Drainage.—On Saturday last, March 17th, the first sod of the Maidstone drainage works was turned at the Medway outfall, below Allington Lock, by Mr. Lewis Angell, the engineer of the works. The first contract, for main sewers, is taken by Messrs. James Neave & Sons, and the estimated cost of the works is 30,000*l.*

TENDERS

For alterations and shop-fittings, 18, Edgware-road, for Messrs. H. Benjamin & Co. Mr. W. S. Witherington, architect:—

Colls	£1,139 0 0
Yardley & Sons	1,028 14 6
Hay & Sons	908 0 0
Tory	849 4 6

For paving west side of Latymer-road, Hammersmith, 4,840 superficial yards, laid with 3-in. concrete and ½-in. asphalte, exclusive of gateways, for the Fulham Board of Works:—

Val de Travers	£1,462 0 0
Stieble	1,123 5 0
Société des Françaises	1,097 0 0
Brunswick Rock Company*	1,090 0 0

* Accepted.

For a pair of villas at Sanesbrook, for Mr. Thomson. Mr. Waterson, architect. Quantities by Messrs. Whitmore & Kennard:—

Cullum	£1,960 0 0!
Charlton & Mansell	1,655 0 0
Wood	1,634 0 0
King & Brown	1,749 0 0
Harris & Wardrop	1,725 0 0
Webb	1,690 0 0
Newton	1,687 0 0
Jefferson	1,640 0 0
Warren	1,500 0 0
Cousins	930 0 0!

For Cinderford Waterworks. Messrs. Gotto & Beesley engineers:—

Contract No. 1.

For iron pipes:—

Laurie & Co. (accepted)	£3,001 0 0

Contract No. 2.

For construction of pumping establishment and reservoir, and laying water mains:—

Phillips & Co. (accepted)	£3,797 0 0

Contract No. 3.

For engines, boilers, and pumps:—

Watts & Co. (accepted)	£1,000 0 0

For four manufacturing premises, Whitecross-street, City. Messrs. Ford & Hesketh, architects:—

Kirk & Randall	£7,344 0 0
Downs & Co.	7,343 0 0
Brass	6,994 0 0
Shaw	6,962 0 0
Boyce	6,856 0 0
Kilby	6,747 0 0
Browne & Robinson	6,645 0 0
Lawrance	6,586 0 0
Mark	6,536 0 0
Peto Brothers	6,435 0 0
Newman & Mann	6,410 0 0
Crabb	6,115 0 0

For new house, on Beulah-hill, for Mrs. Heffer. Mr. R Adolphus Came, architect. Quantities by Mr. Thomas M. Deacon:—

Dove, Brothers	£3,345 0 0
Shaw	3,221 0 0
Yardley	3,198 0 0
Sewell & Son	3,157 0 0
Harper	3,057 0 0
Newman & Mann	3,022 0 0
Bayes, Brothers, & Allen	2,946 0 0
Bowyer & Son	2,919 0 0
Mason	2,702 0 0
Longley	2,698 0 0
Aitchison & Walker	2,662 0 0
Thomas	2,630 0 0

For new residence at Cliftonville, near Brighton. Mr. Thomas Elworthy, architect:—

Hide & Co.	£5,370 0 0
Spreadborough & Co.	5,196 0 0
Chambers	5,190 14 6
Wells	5,089 0 0
Patching & Webber	4,928 0 0
Oxley	4,900 10 0
Bruton	4,900 0 0
Allen	4,800 0 0
Longley	4,650 0 0
Hall	4,600 0 0
Smith	4,339 0 0

For schools, SS. Mary and Michael's, Commercial-road. Mr. John Young, jun., architect:—

Robbins	£1,970 0 0
Little	1,599 0 0
Bayes & Co.	1,583 0 0
Lawrance	1,575 0 0
Ennor	1,550 0 0

For presbytery, St. Boniface, Whitechapel. Mr. T. Young, jun., architect:—

Read & Son	£1,340 0 0
Morter	1,193 0 0
Conder	1,159 0 0
Newman & Mann	1,150 0 0
Ashby & Horner	1,078 0 0
Lawrance	1,035 0 0

For new Divinity and Literary Schools, Cambridge University. Mr. B. Champneys, architect. Quantities supplied:—

Smith	£14,430 0 0
Bell & Sons	14,018 0 0
Parnell	13,013 0 0
Dearde	12,413 0 0
Loveday (accepted)	11,977 0 0

For new offices, No. 3, Great Tower-street, for Mr. S. Harrison. Mr. John Young, jun., architect:—

Conder	£2,550 0 0

For new offices, No. 4, Great Tower-street, for Mr. T. C. Howell. Mr. T. Young, jun., architect:—

Conder	£2,344 0 0

For alterations, No. 24, Houndsditch, for Mr. Cantor. Mr. T. Young, jun., architect:—

Sparks	£475 0 0
Read	400 0 0
Ellis	350 0 0
Palmer	316 0 0
Roper	270 0 0

For alterations at the Bedford Arms, Seven Sisters-road, Holloway, for Mr. Miller. Mr. E. Brown, architect:—

Kiddell & Son	£942 0 0
Marr	898 0 0
Harris & Wardrop	897 0 0
Cole (accepted)	870 0 0

For new kitchen to Shoreditch Infirmary, for the guardians. Mr. J. W. Peggs, engineer:—

Niblet	£533 0 0
Waldram & Co.	528 0 0
Linfield	526 0 0
Syder	523 0 0
Bulford	519 0 0
Smith	370 0 0
Parker & Evans*	320 0 0

* Accepted, subject to approved securities.

For new pumps to the deep well, Shoreditch Workhouse, for the guardians. Mr. J. W. Peggs, engineer:—

Field & Bray	£849 0 0
Grover & Co.	802 10 6
Evans, Keene, & Co.	733 5 0
Owens & Co.	750 0 0
Jackson	728 10 0
Tilling	685 0 0
St. Pancras Iron Co. (accepted)	472 0 0

For stone façade, Nos. 10 and 11, Mincing-lane, for Mr C. Raper. Mr. T. Young, jun., architect:—

Ashby, Brothers	£3,426 0 0
Conder	3,067 0 0
Trollope	3,004 0 0
Hill, Higgs, & Hill	3,055 0 0
Brass	2,544 0 0
Smith & Co.	2,428 0 0
Ashby & Horner	2,420 0 0

For new buildings, Nos. 11 and 12, Idol-lane, for Mr. F. H. Mitchell. Mr. T. Young, jun., architect:—

Conder	£2,716 0 0

For alterations and additions to premises, No. 10, Acre-lane, Brixton, for Mr. Henry Vernham. Mr. James Harrison, architect. No quantities supplied:—

Green	£591 0 0
Dye	556 0 0

For Nos. 1 and 2, Bulmer-villas, Copleston-road, Peckham, for Mr. Gauntlett, of Clapham. Mr. S. F. Thomas, architect:—

Kent	£1,282 0 0
Young	1,215 0 0
Terry	1,035 0 0
Lupson (accepted)	1,010 0 0
Colebrooke	995 0 0
Young (withdrawn)	950 0 0

For villa residence, with approach, entrance-gateway, boundary fences, and outbuildings thereto, at Start's-hill, Orpington, Kent. Messrs. Hollingham & Son, architects. Quantities by Mr. David G. Reddall:—

Gould & Brand	£1,495 0 0
Haisman	1,349 19 0
Brooly	1,335 0 0
Stiff	1,331 0 0
Linfield	1,310 0 0
Niblett	1,249 0 0
Parker & Evans	1,238 0 0
Taylor & Son	1,097 11 0

For the erection of a house and shop, at 91, Hackney-road, for Mr. Tomkins. Mr. W. Mundy, architect:—

Nightingale	£643 0 0
Hearl & Son	635 0 0
Beal	633 10 0
Wire	622 0 0
Phillips & Bestiker	616 0 0
Thomason	593 10 0
Jarvis & Sons	593 0 0
Judd & Hawkings	585 0 0

For the erection of new cooperage and dwelling-house, Broad-street, Ratcliffe, for Messrs. Holt & Co. Mr. O. Dunch, architect:—

Palmer	£2,285 0 0
Outhwaite	2,088 0 0
Curtis	1,950 0 0
Johnson	1,897 0 0
Judd & Hawkings	1,845 0 0

For alterations to the Lamb, No. 3, Colt-street, Bethnal-green, for Mr. J. Huxley. Mr. E. Brown, architect:—

Stamp & Bowtle	£1,025 0 0
Judd & Hawkings	995 0 0
Sheffield	973 0 0
Somerville & Smith	896 0 0

For the erection of two detached residences, at Crouch-hill, for Messrs. Webb, Brothers. Messrs. W. Waymouth & Son, architects. Quantities not supplied:—

Axford	£1,960 0 0
Hawkes	1,934 0 0
Sawyer	1,830 0 0
Prebble & Co.	1,760 0 0

For the erection of villa residence, at Ealing. Mr. E. J Mayor, architect. Quantities by Mr. Broadbridge:—

Jopling	£1,650 0 0
Niblett	1,299 0 0
Mudd	1,165 0 0
Nye	1,150 0 0
Robinson (accepted)	1,020 0 0

For alterations and additions to residence, at Dalling, Norfolk, for Mr. J. H. Pearson. Mr. Kelly, architect:—

Turner & Sons	£848 18 0
Howard	702 12 0
Beeton	687 4 0

For residence, at Datchet, Bucks, for Miss Leathley. Mr. W. A. Boulnois, architect. Mr. Shoppee, surveyor:—

Claridge	£4,814 0 0
Hollis	4,474 0 0
Newman & Mann	4,336 0 0
Holland & Hannen	4,230 0 0
Conder	4,200 0 0
Trollope & Sons	4,047 0 0
Macey	4,018 0 0
Messom	3,993 0 0
Shaw	3,930 0 0
Higgs & Hill	3,894 0 0
Braid & Co.	3,881 0 0

For new Boys' Industrial School building, at Hampstead, for the Field-lane Institution. Mr. F. W. Porter, architect. Messrs. Williams & Gritten, architects:—

Colls & Sons	£11,320 0 0
Ashby & Horner	11,220 0 0
Wall, Brothers	11,115 0 0
Shaw	11,109 0 0
Smith & Co.	11,000 0 0
Holland & Hannen	10,987 0 0
Brass	10,974 0 0
Dove, Brothers	10,845 0 0
Macey	10,494 0 0
Conder	10,484 0 0
Browne & Robinson	10,410 0 0
Lawrence	10,070 0 0
Higgs & Hill	9,800 0 0